SEPTEMBER, 1945

Industrial FINISHING

Published Monthly in the Interest of

Freedom's FORGE!

American military and naval power deserves much of the credit for bringing about V-day. But American industry also deserves to share this credit, for it was the superior scientific and productive power of American industry, coordinated with manpower, that truly became Freedom's Forge. V-day was a real Victory for *all* Americans.

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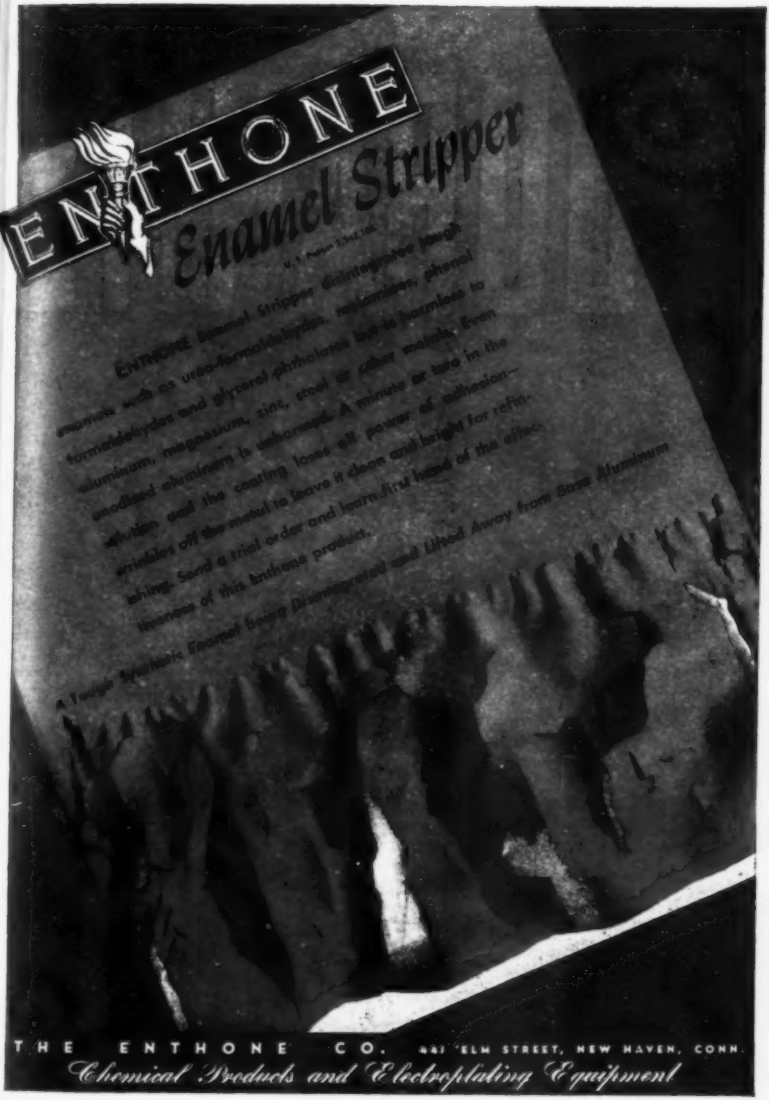
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ENTHONE Enamel Stripper disintegrates lacquers, enamels, with as urea-formaldehydes, melamines, phenol formaldehydes and glyceral phthalates but is harmless to anodized aluminum, magnesium, zinc, steel or other metals. Even anodized aluminum is unharmed. A minute or two in the solution and the coating loses all power of adhesion—shrivels off the metal to leave it clean and bright for refinishing. Send a trial order and learn first hand of the effectiveness of this brilliant product.
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DURANITE is the high-speed plastic base production finish. It comes in clear and a wide range of colors for spray, dip or roller-coat application. May be used with infra-red or convection oven baking.

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TWENTY-FIRST YEAR OF PUBLICATION

Industrial FINISHING

W. H. ROHR, Editor E. A. DOSCH, Assoc. Editor

Vol. XXI, No. 11 SEPTEMBER, 1945 $2.00 a Year

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Eastern Representative: C. A. Larson, 254 West 31st St., New York 1, N. Y.; Phone Penna. 6-9049

First Postwar Car—The September issue of *Pic* Magazine features a provocative article on Bill Stout's conception of the postwar automobile. Stout, a past president of the Society of Automotive Engineers, calls for a new rear-engine design, larger and roomier interiors, better front and rear visibility, forced ventilation, a trimmer body with fewer gaudy trimmings, and a genuine "thermal" body.

Detroit was excited a few weeks ago when news of Stout's new assignment became known. The famous designer has been signed up by Graham-Paige to supervise the development of that firm's first real postwar car. It will embrace many of his radical ideas, and may even be fashioned of a body made of glass fibers combined with newly-perfected resins. The entire industry is watching this experiment with keen interest.

* * *

British Invasion?—While we are on the subject of motor cars, you may care to know that England has already shipped us samples of the projected postwar Austin auto. It is a 10-hp. 4-door sedan, and is designed to sell in the United States on a basis of quality, rather than price. Many American soldiers acquired a highly favorable impression of this vehicle during their stay in the British Isles.

Some observers feel that the export of the first Austins is intended to be more of "stunt" than the start of real competition for our manufacturers. British producers will probably not be able to turn out more than 25,000 units during the rest of 1945. Her normal peacetime output was less than half a million cars annually.

* * *

Forecast on Prices — Will Lissner, of the New York *Times*, presents an important analysis of the probable price trend in the years just ahead. Although he doubts whether the United States will experience a repetition of either the wild inflation of Germany or the extreme deflation of England Lissner believes that any of the intermediate variations may occur.

"The evidence indicates," he writes, "that prices may decline for three to six months after the war, that it may be followed by some postwar inflation, and that there may be a subsequent deflation during the period of adjustment to peacetime production." In his opinion, the pattern of change will be influenced largely by the activities of the OPA, the Treasury and the Federal Reserve System.

* * *

Aging Machinery — We are accustomed to assume that the United States will emerge from this war with practically a brand new industrial plant. It is therefore a bit of a jolt to study the survey recently released by *American Machinist*. According to this investigation, almost 40% of all metalworking equipment in this country is more than ten years old.

Furthermore, if one excludes from consideration the machine tools and other production equipment owned by the U. S. government, the ratio of machines more than ten years of age jumps to

(Continued on page 7)

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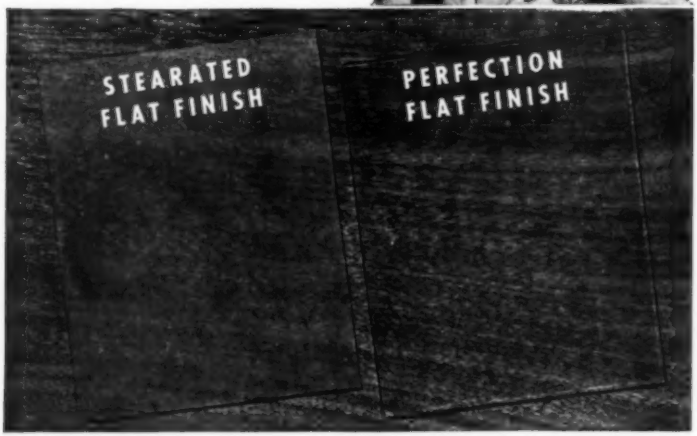

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54%. The striking point is that the metal working plants of the country are not as well off today, from the standpoint of modernization, as they were at the start of the depression in 1930!

Here is what Burnham Finney, the editor of this responsible trade journal, has to say: "Thousands of plants are attempting to operate with machines of obsolete design—machines that long ago ceased to be an asset if low costs and high quality of product mean anything."

* * *

Barnacles Again—The latest report on checking barnacle growths on ship's hulls comes from Oregon State College, where Prof. R. E. Dimick has been testing paints made with DDT, the miracle insecticide. He claims that his formulation repels barnacles on submerged panels for six months, while similar panels, protected with the finest commercial anti-fouling paint, become encrusted in half that time. DDT is insoluble in water, and continues to function as long as the paint lasts.

* * *

Better Distribution Needed — "The bad years of the Twenties and Thirties can be traced to the fact that top management had overlooked the importance of distribution." That pithy statement was not uttered by an excitable soapbox orator, but instead by George S. Jones, Jr., vice president of Servel Inc.

Addressing a clinic sponsored by the National Association of Manufacturers, the speaker pointed out that maximum production, low-cost distribution and high-level employment can be obtained only through the purchases of millions of customers.

The great depression, Jones added, was brought about by under-consumption rather than by over-

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production. "Production is only a means to an end," he declared, "and not the end itself."

* * *

Fewer Flat Tires—If we are to believe the optimistic prophecies of our petroleum chemists, tomorrow's inner tubes will be practically blowout-proof. Made synthetically from butyl rubber, they will require inflation only few times each year, and will be able to run fairly well for many miles after a puncture has developed.

The major work in this field has been done primarily by Standard Oil Development Co. Butyl is made from petroleum, and some twelve million pounds a month are going to the army for use in tubes. But other important applications of this resilient material are being predicted: for example, in the manufacture of tents, draperies and waterproof clothing.

* * *

Building Shortages — Everybody is talking about the coming boom in home construction; but a lot of people would like to know where the materials will be obtained. Joseph E. Merrion, president of the National Association of Home Builders, states quite frankly that basic shortages threaten the entire program.

Emphasizing the fact that his industry possesses a great capacity to produce jobs and to stem inflation, Merrion contends that deep alarm is being felt over the limited supply of lumber, brick and other essential products. "We will need at least one billion board feet of lumber alone in the next twelve months," he insists, "if we are to start the industry on its way to supplying the millions of jobs expected of it."

(Continued on page 136)

There'll soon be enough to go around . . .

With the relaxation of material restrictions, we'll be back into full production of peacetime products just as soon as possible. Then . . . you can again depend on the same high quality and superior service which have made PEDIGREE INDUSTRIAL FINISHES favorites of the industry.

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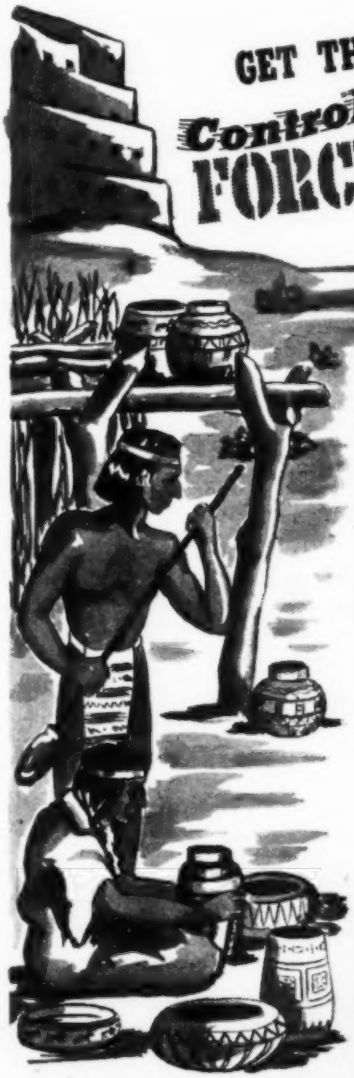

Since the Indian potter first employed heat to obtain the beautiful effects his handiwork is noted for, so many advances have been made in forced drying methods that today, manufacturers of all kinds of products—wood, metal or ceramics—recognize the value of forced drying in obtaining the finish they want . . . quickly, and with remarkable savings in time, labor and material.

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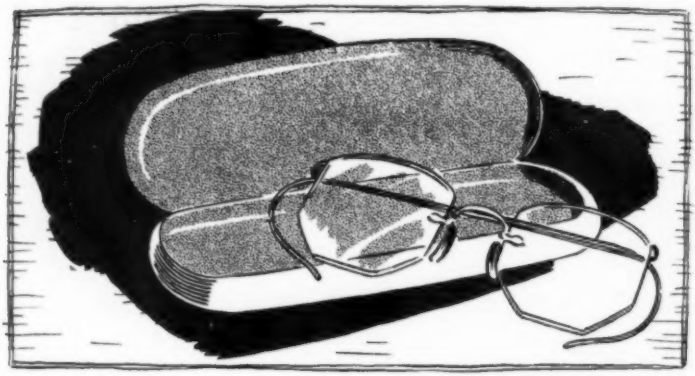

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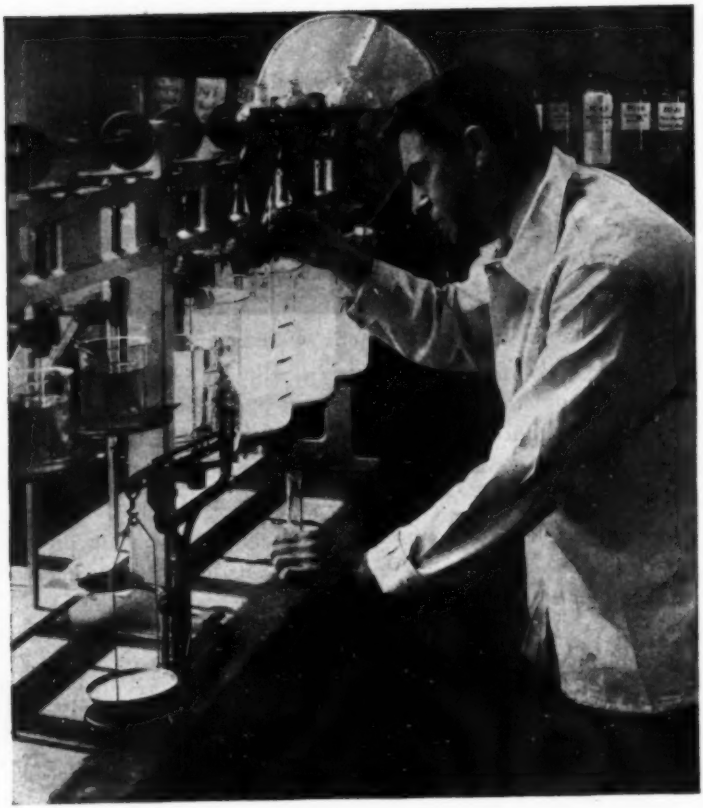

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1. Buy EXTRA Victory Bonds

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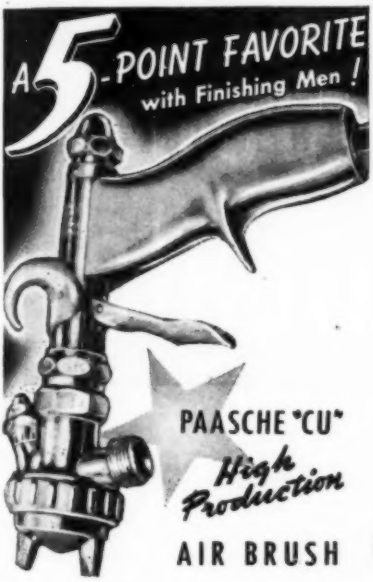

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Off in 5 Seconds

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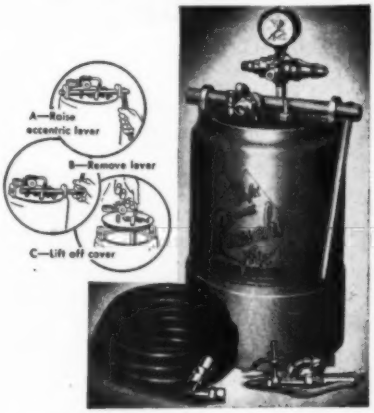

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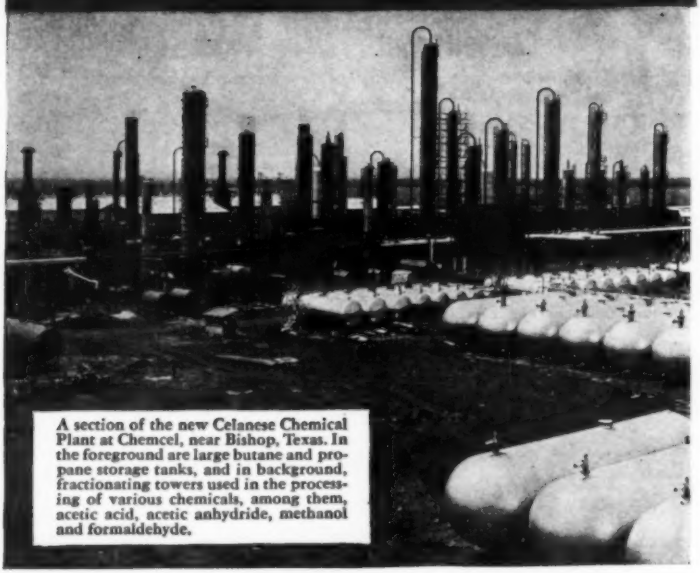

A section of the new Celanese Chemical Plant at Chemcel, near Bishop, Texas. In the foreground are large butane and propane storage tanks, and in background, fractionating towers used in the processing of various chemicals, among them, acetic acid, acetic anhydride, methanol and formaldehyde.

CELANESE CORPORATION OF AMERICA

Where practical research is governed by the end use

THE MODERN Celanese chemical plant, now in operation at Chemcel near Bishop, Texas, greatly enlarges the production facilities for Celanese organic chemicals. The expanse of fractionating columns, towers and collector tanks reflects the growing importance of this phase of Celanese operations and the research responsible for its development.

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LUBRICANT ADDITIVES
INTERMEDIATES
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ANY DEGREE OF GLOSS

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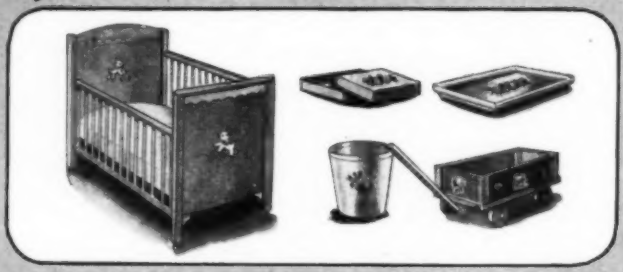

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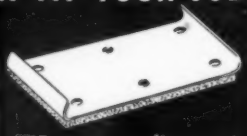
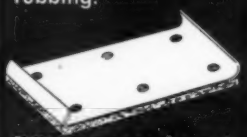
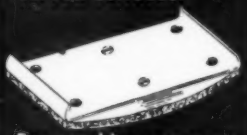


FELT—wet sanding and rubbing.



RUBBER—general sanding, rubbing, polishing, deburring.

SPONGE RUBBER for curved surfaces.



For working concave surfaces.

EASE OF OPERATION: With the "EASY" event inexperienced workers turn out more and better work than two or three hand operators for sanding, rubbing, polishing, scuffing, "feather-edging", and de-burring of all materials.

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"PERFECT BALANCE"

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Carefully controlled distribution of the brushing stock gives perfect balance and maximum efficiency to these power driven rotary brushes. Wire or fiber. May be used as individual sections or in assemblies.

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These brushes are made with various fills, such as nickel-silver wire, tampico or horsehair —each engineered to a specific purpose.

UNI-FILL

These scratch brushes are uniformly filled. They are trimmed with a "bite" to give the best performance obtainable with hand scratch brushes.

RED CENTER

Red Center Wheel brushes, now available, are made in various diameters and degrees of stiffness for many different applications. They are sturdy in construction and in perfect balance.

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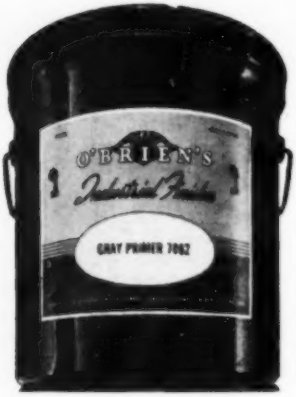

Now "Dip-tank Day" Comes But Once A Year!

Imagine a baking primer so stable in the dip tank that cleaning is required as little as once a year! Imagine how much grief and expense such stability can save your finishing department!

O'Brien's Gray Primer 7062 has this amazing stability. Moreover, this product has been developed to eliminate beading. It actually "flows backward" after draining.

The applied film is equally outstanding. It is flexible, durable, salt-resistant. Detailed data is yours for the asking. Write—outlining your requirements.

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CLEANING-UP A $1,000 RUST-PROBLEM

SUN SPIRITS . . . Cleans Small Parts, Ends Condensation Problems and Resulting Rust-Spots

A New England manufacturer was using a well-known cleaning-fluid for cleaning and drying small parts that had to pass Government inspection. Rapid evaporation caused sudden chilling, resulting in condensation of moisture.

Rust-spots were causing rejects. The management finally switched to Sun Spirits. The rusting-problem was immediately and permanently eliminated, and a total saving of $1,000 a year was the estimated result. Parts now pass inspection easily.

These facts from the files of Sun's industrial products division are typical of the success with which Sun Spirits is being used in hundreds of plants for cleaning metal parts and equipment. For fast, spotless, safe removal of oily films, call the Sun man near you, or write . . .

SUN OIL COMPANY · ***Philadelphia 3, Pa.***

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Hand finishing takes less time and "elbow grease" when you use Elek-tro-cut Three-M-ite Cloth. Whether you are deburring a stamping, removing tool marks from a machined part, or cleaning up the surface of a casting, the fast, even cut of this sturdy abrasive cloth produces better finishes in a shorter time. Its firm backing keeps the abrasive mineral from backing away from the work, yet is flexible enough to conform to curves and corners of the surface. It is a tough, long wearing abrasive, too, that offers real economy on a host of finishing operations. Order it by trade name—Elek-tro-cut Three-M-ite Cloth—from any distributor of 3-M Products.

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Quality...versatility...economy...always have been outstanding characteristics of Egyptian finishes.

Through war years Egyptian's high standards steadily have been maintained, with production largely on finishes for war goods, of course.

Now as American industry swings back to production for peace, "quality" and "Egyptian" continue to be synonyms.

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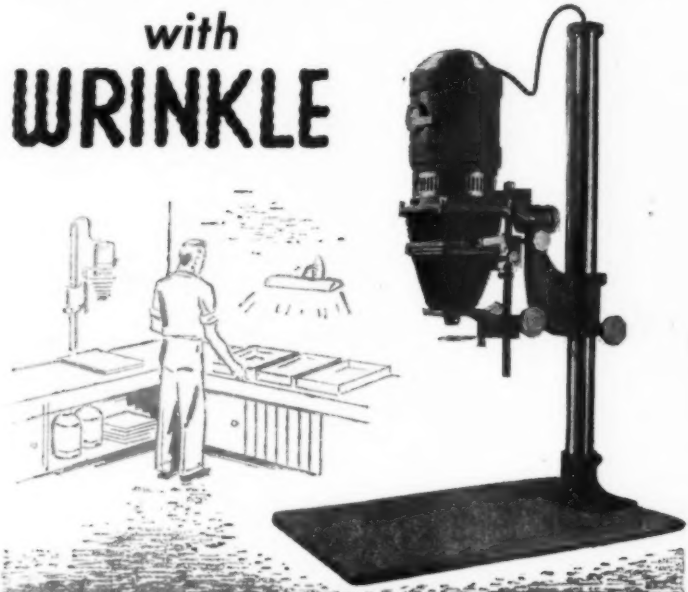
SPECIALIZED PRODUCTION FINISHES

ACCENTUATING the NEGATIVE

with WRINKLE



WRINKLE . . . the one-coat finish . . . is highly popular with manufacturers of photo enlargers like the one illustrated above, not only because it is as tough and durable as it is attractive, but because a WRINKLE surface helps dissipate the heat generated in the operation of these units and resists the action of photographic chemicals.

If you're not familiar with this effective, economical finish, you'll want to investigate WRINKLE . . . now. Why not call us in for a consultation?

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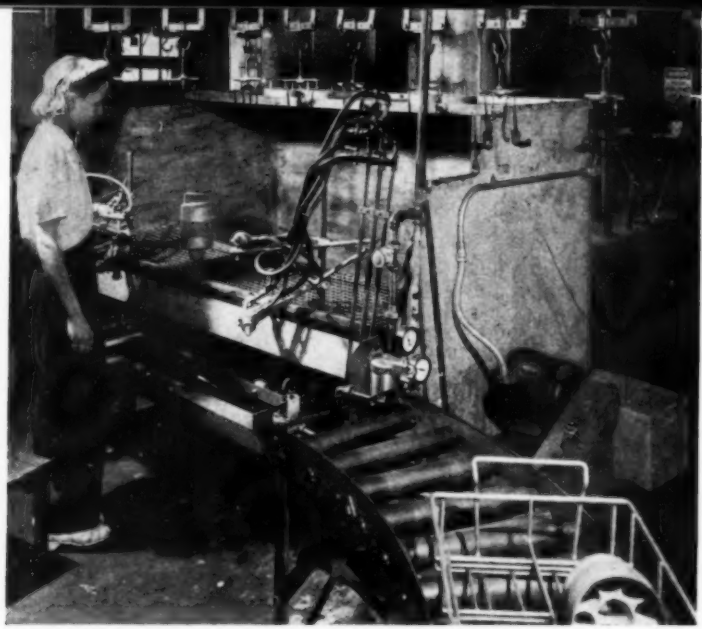
"Wrinkle," "Silky Wrinkle" and "New Wrinkle" are registered trademarks of New Wrinkle, Inc.



Semi-automatic spray painting setup in down-draft spray booth. The motor in position for spraying is masked at top and bottom, so that only a part of it is exposed for painting. Two vertical spindles are available to receive the motors to be painted. Conveyors bring in and take away the work in process.

CLEANING · PAINTING · DRYING SETUP FOR *New Metal Products*

BY BYRON MORRILL

Morrill & Renshaw
Finishing Engineers

Engineering plans for a new conveyorized cleaning - painting-drying setup on a variety of products can be profitably patterned along the lines of the one illustrated here for protectively coating rockets.

THE Goss Printing Press Co. of Chicago went into production of Navy rockets under the overall supervision of Mr. A. J. Graf, Works Manager. This meant a complete new production line with the least possible delay, and a new finishing system. This company has long enjoyed an enviable reputation in peace and war for the manufacturing of Naval Ordnance and top grade machinery and machined metal parts.

Morrill and Renshaw were called in to help plan and furnish the

production painting system, including the metal surface preparation. It was necessary to follow Navy specifications for a durable protective coating, as the products were to be used in hot humid climates.

This unusual complicated coating operation was planned, arranged and timed, not for the maximum speed of coating any one part but for straight line production of a given quantity. It was important that the actual handling operations be done with the minimum of skilled labor. This was accomplished with the least possible man hours and use of materials, with the thoroughly alert cooperation of the Chicago Naval Ordnance personnel and the Goss organization.

To Coat Outsides and Insides of Threaded Metal Tubes

The parts to be coated included a heavy walled tube approximately 50-in. long and 5-in. in diameter, and a motor which is machined from solid bar stock approximately 3-in. long and 5¼-in. in diameter. The tube is threaded on both ends with female threads which must be protected from the lacquer by masking. The motor is machined with many indentations and ridges which are required to perform its special function. There are also a few other smaller parts that complete the assembly.

Insofar as the surface preparation and coating are concerned, the tubes are handled on one complete production line to the final assembly, while the motor and small parts move along on a separate line.

Vapor Degreasing Plus Phosphoric Acid Dip

By means of a bench-height special roller conveyor, the fabricated tubes are carried to a vapor degreaser. They are transferred to a roller chain crossbar type of conveyor. The bars are equipped with hooks arranged to carry the tubes in a slightly tilted (from horizontal) position for draining. The degreaser is operated by controlled electric immersion heaters, and uses tetrachlorethylene solution.

The tubes pass through a spray, a dip, and through the vapor. In this hot clean condition, they are automatically released from the degreaser conveyor to be carried into a hot phosphoric acid dip. This dip, for a period of three minutes, makes a slight etch on the metal to provide "tooth" for the lacquer. It leaves a very thin phosphoric coating which bonds the lacquer, similar to a primer coat. It further removes any trace of corrosion and prevents rust during processing operations.

The tubes then move into a cold water rinse and through a hot dip of a weak solution of chromic acid which removes semi-loose crystalline particles. Drying is accomplished by means of a combination of infra-red heat lamps and a large volume of air blown through specially directed nozzles.

Masking; Automatic Spraying Outside and Inside

Clean dry tubes are rolled onto a continuous elevator for transferring to the lacquering equipment. Special oversize rings are screwed to each end of each tube. These rings perform two functions. First, they mask the threads for the painting operation. Second, being oversize, they serve as wheels to provide a natural roller carrier for gravity movement of the tubes. At the same time they prevent any marring of the coated tubes as they roll over the conveyor track.

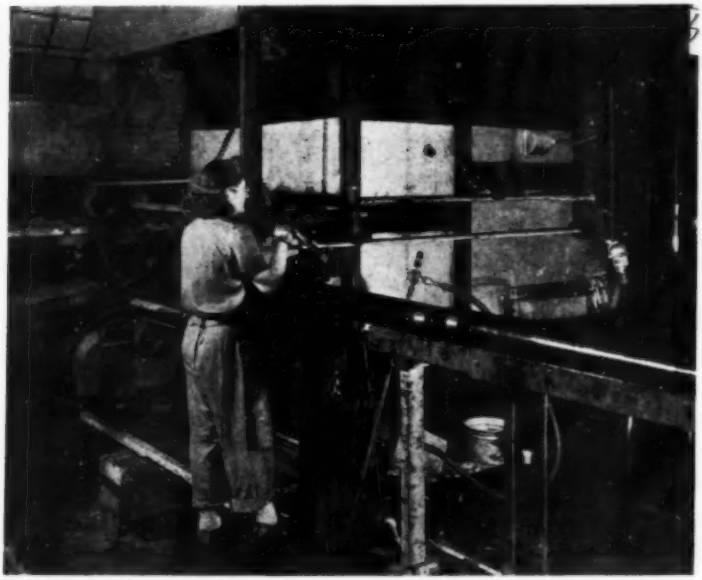
The spray booth conveyor track consists of parallel angle irons

mounted on an incline over which the carrier rings roll. The tubes roll into one side of a modern spray booth which has openings at each side. The booth is equipped with a moving gun mechanism. The mechanism consists of a spray gun carriage mounted on a horizontal track. The carriage is propelled by means of a roller chain the length of its travel, over two sprockets arranged with limit switches, for one cycle operation. Two automatic spray guns are mounted on the carriage. One is for outside coating and is of the standard fan type. The other is for inside coating. It produces a 360° spray pattern at right angles to the internal extension part of the spray gun.

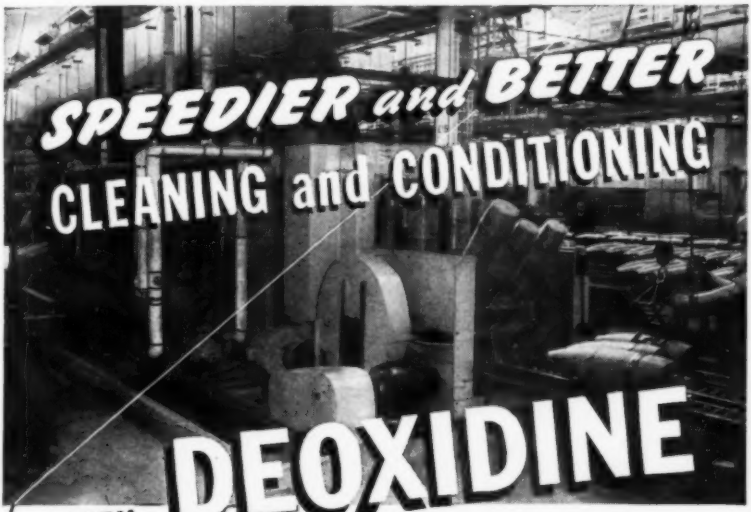
During spraying, the tubes are rotated by two power driven shafts with pulleys made to contact the end-masking carrier rings. The operator manually pushes a lever which removes one painted tube and at the same time places the next one in position for spraying. The operator then turns a switch which puts the gun carriage in operation for one complete in-and-out stroke. The guns spray only on the return or outward stroke.

Painted tubes travel out of the opposite side of the spray booth on the inclined conveyor track, and pass under a battery of infra-red electric lights. After a short cooling time, the tubes move into a second spray booth for another

(Continued on page 79)



Transferring metal tubes to crossbar chain conveyor (left) which carries them in slightly tilted position, through a modern vapor degreasing machine.



War's demands for rapid production in the early, critical days of our participation led to the simplification and speeding up of metal cleaning methods and the preparation for protective paint.

Today, DEOXIDINE cleaning processes far exceed the best prewar metal cleaning and conditioning practices.

DEOXIDINE cleans and prepares for paint at the same time — eliminating the necessity for a special conditioning treatment — a material saving in time and cost of operation.

The detergent properties of DEOXIDINE are excellent and, being acidic, eliminate the danger of leaving paint removing or paint-bond destroying alkali residue on cleaned metal surfaces.

There are grades of DEOXIDINE suitable for application by spray, dip or brush and for cleaning various alloys and varying amounts of rust and soil.

In planning now for postwar reconversion, economy of operation is essential to meet forthcoming competition. ACP Technicians will gladly cooperate with you in developing an efficient and economical set up for metal cleaning and conditioning. Technical Service Data Sheets on DEOXIDINE sent on request to Dept. B-9.

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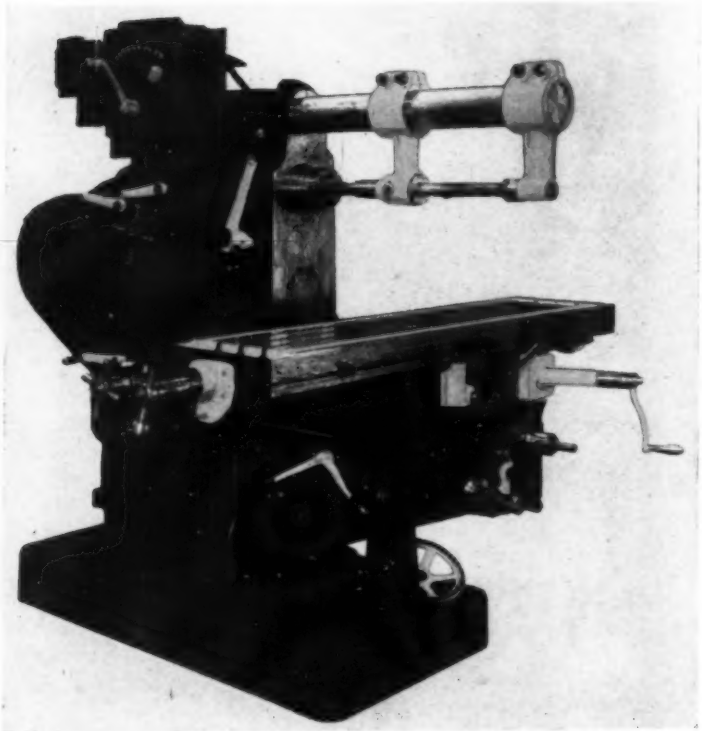
Color Dynamics for M



Machine tools, skillfully painted in two or more carefully selected colors, exert some remarkably beneficial effects on nearly all factory workers.

MACHINE tools are now using cosmetics. The new science of Color Dynamics, which involves the scientific utilization of the energy in color to promote efficiency in industry, is rapidly becoming more popular and causing widespread favorable reaction among both management and workers.

Its principal advantages are: 1) The machine presents a pleasing picture, in fact it is quite beautiful; 2) it is restful on the eyes of the operator, resulting in less fatigue, better work, lower costs; 3) the operator develops a sense of pride of ownership so that he takes better care of the machine which, of course, lowers the cost

Color for Modern Machinery

Why colors other than black and gray are so much more desirable for factory machines and how the effective use of more than one color on each machine helps the workers by relieving them of eye strain, thereby greatly reducing fatigue, irritability, accidents and absenteeism.

BY ALBERT S. KESHEN

of upkeep and maintains accuracy; 4) it enables the foreman or supervisor to tell at a glance if the machine is being taken care of properly.

This new production technique involves the application of visual focal paint to machine parts. It has long been recognized that color has a marked influence on the worker's morale and on his rate of production. Color, properly used on machinery, also makes for an increase in the quality and quantity of production.

Theory of Color Dynamics; Suitable Colors for Machines

The theory of color dynamics is a simple one. It involves the use of color to highlight, reveal and emphasize. The transition is comparatively inexpensive, enabling a manufacturer to use color to bring out the best in the lights already installed in his plant.

The first step is the separation of the critical from the non-critical parts of the machine. The critical parts are painted with a color designated as "focal". These focal colors are designed to focus the workers' attention precisely where it should be—to arrest his eye and reduce the unnecessary travel resulting when the entire machine is painted a dull gray.

The second step, and equally important, is relegating to the background of non-critical parts. This can easily be done with properly chosen colors. These non-critical parts must recede back. The most prevalent color used is what one paint concern calls "Vista Green" applied to the body of the machine. This company's laboratories have disclosed that no other color has such a relaxing effect on the human eye as green. As proof, they point to the widespread use of green by nature in forest and field. The darker shade of green paint is applied to the outer surface of the machine, with the lighter green shade appearing on the inner parts such as oil pans and the inside of lathe beds.

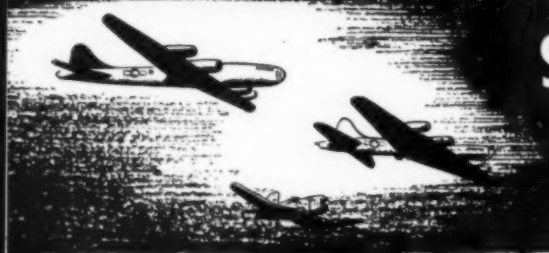
Two other colors are used — cream and orange. All moving parts such as handles, wheels and turrets are done in the cream color, with orange selected for the danger spots. These latter include covers, outside gears, electric switches and buttons.

How One Concern Uses Colors on Its Machines

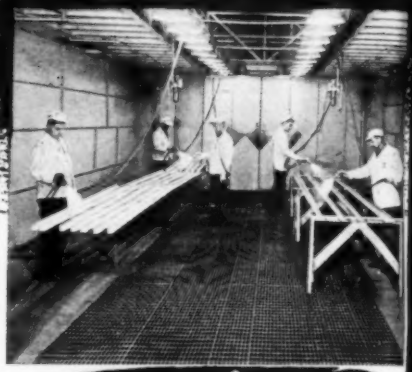
The practical application of paint to machines, as carried out by Hasco Machinery Co., Newark,

How Three Famous

SPEEDED T



BOEING



DOUGLAS

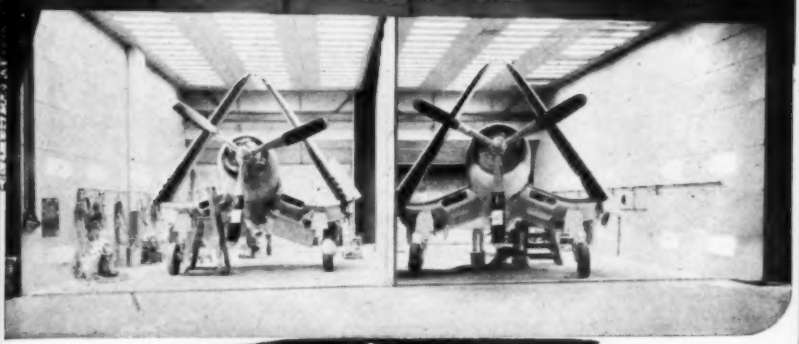
THE amazing rate of production reached by the aircraft industry was the result of *Speed* and then *more Speed* in every phase of plane manufacture.

An important link in the production chain was the finishing line. The most modern equipment was needed to insure speed and efficiency in painting parts and complete ships.

In the speeding up of these finishing operations DeVilbiss Spray Booths—of various types—played a major role. They helped to greatly increase the finishing rate of small parts and cut the time required to paint complete ships.

Shown above are three types of DeVilbiss Spray Booths used by

...us Aircraft Builders
...ED THEIR PRODUCTION



CHANCE-VOUGHT

three leading aircraft builders. Each is designed for a particular kind of work. All are geared to mass production painting.

The numerous applications of DeVilbiss exhaust equipment on fast moving aircraft production lines may suggest profitable ways to improve your postwar finishing operations.

THE DEVILBISS COMPANY • TOLEDO 1, OHIO

Canadian Plant: WINDSOR, ONTARIO

DE VILBISS

Spray Systems

SPRAY EQUIPMENT • EXHAUST SYSTEMS
AIR COMPRESSORS • HOSE AND CONNECTIONS

N. J., is comparatively easy. First the surface is thoroughly cleaned with kerosene or scraped to remove any blemishes or surface imperfections.

A hand brush is generally used to apply the paint, although if parts not to be painted are carefully masked, then spray painting can be employed effectively. Two or three coats are used. In many cases three coats are required, especially when a cream color is used over a black or a very dark color. A repaint job may be needed once a year, especially if the machine is subjected to severe service.

To obtain maximum efficiency it is desirable that the focal color used be in sharp contrast with the material being worked. For example, if the processed material is of steel or aluminum and the focal color is gray, the operator will be under constant eye strain to determine where the material ends and the machine begins. This unnecessary eye tension can be removed by using a focal color that gives a satisfactory contrast with both the stationary part of the machine and the material entering or coming out of it.

Effects of Color Dynamics on Factory Workers

The full effects of color dynamics have been achieved by those plants which apply color to their entire environment—walls, ceilings, floors, dollies, jigs, bins and all other equipment in the vicinity of the operator. The fundamental purpose of coloring here is to provide cheerfulness plus restfulness and good visibility.

As a morale builder, interiors are brightened by colors that suggest sunlight. In uncomfortably hot environments, colors suggesting coolness are applied. On the other hand, warm shades are advisable where low temperatures are constantly encountered.

Eye fatigue can be lessened by having eye-rest surfaces, such as surrounding walls, using approximately the same general tone of color (although not necessarily the same color) as the one the worker sees when he bends over his work.

Color, When Properly Used, Contributes to Safety

As a safety measure, all aisles and traffic lanes are plainly marked. The entire width of the aisle is painted in a color contrasting to the body of the floor, or boundary lines are made of thick stripes of a vivid color. These serve as a warning and guide for machine operators, truckers and other workers.

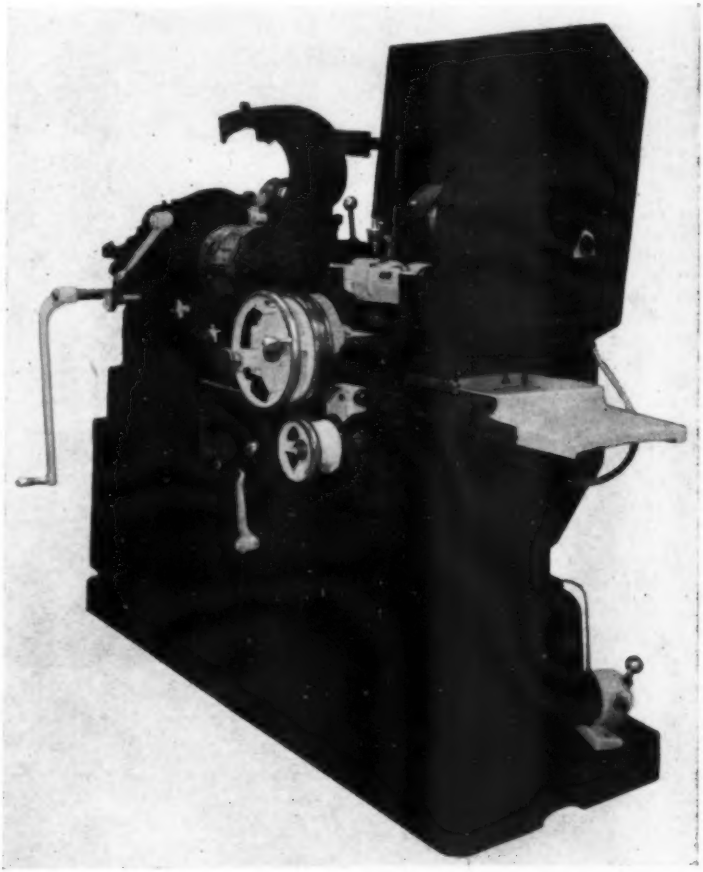
Likewise, mobile equipment such as motorized trucks, conveyors and cranes are painted with high visibility colors, so that workers cannot fail to notice their approach. With such a wide application, the color reformation of the factory is complete.

Herbert I. Segal, general manager of the Hasco Machinery Co., attributes the widespread use of color dynamics to women war workers' insistence. They reacted adversely to the drab colors so commonly associated with factory work. Plant managers, labor-management committees and personnel guidance counselors learned that women workers wanted color in their work surroundings. Following this survey, Segal declared that even experienced mechanics perferred the colored tools, as compared to the conventional machinery in monotonous gray.

Segal also revealed that this facial make-up plan for machine tools has resulted in a marked reduction of absenteeism. "There

are several reasons for this," he explained. "Primarily it helps to reduce fatigue and eye strain. Mental depression among employees is easily brought about by drab, cheerless surroundings. The job gets tougher as the mental attitude of the worker gets worse.

"The worker at this point", Segal said, "begins to look for excuses to stay at home. This also accounts for frequent brief periods of absenteeism during the day on the job. The worker is continually finding reasons to leave his machine. This latter form of absenteeism causes an even greater loss of time." *(Turn to page 44)*



Safety committee directors in plants have agreed that color dynamics also cut down the accident rate. "The safety factor is one of the important considerations in this new treatment", Segal continued, "and methods have been developed to reduce the danger of personal injury. Safety lessons stick in the employee's mind more thoroughly when color is used as a reminder."

"The introduction of this new technique", he concluded, "met with some opposition from certain industrialists. Executives of former days must have been equally doubtful about the practical value of adding to or subtracting an inch from a factory stool. Yet these 'tremendous trifles' now applied by modern industry, to effect higher efficiency, have been tested and found really important. This new phase of color on machine tools is taking its place along with the numerous efficiency adjustments to step up production. It has passed the experimental stage and the factories and workshops throughout the nation are daily being glamourized."

Monsanto Subsidiary to Build Plant in Seattle

Expansion of chemical manufacturing facilities on the West Coast is foreshadowed by the announcement that Monsanto Chemical Co., through its Seattle subsidiary, I. F. Laucks, Inc., has purchased about 29 acres of land south of the city limits of Seattle. The company will erect the most modern plywood adhesives plant in America on the site. The new facility will combine Laucks operations now carried on in two present Seattle plants.

Produced at the new location will be synthetic resins for adhesives, and coatings and wood preservatives now made in the two Laucks plants. It was indicated that offices and research laboratories of the subsidiary which Monsanto acquired last year, will eventually be moved to the new location.

Westinghouse Acquires B. F. Sturtevant Co.

Acquisition of the B. F. Sturtevant Co., Boston, Mass., the pioneer in the design and manufacture of air-handling and processing equipment, is announced by A. W. Robertson, of the Westinghouse Electric Corp.

The Sturtevant Co. becomes a Westinghouse subsidiary operating as the B. F. Sturtevant Co., a Division of Westinghouse Electric Corp.

Yerger Joins Lea Mfg. Co.

C. W. Yerger, formerly Executive Vice-President of The Hanson-Van Winkle-Munning Co., has joined the executive staff of The Lea Mfg. Co. and has been elected Chairman of the Board of Directors. He is to develop postwar plans for the company, as well as to assist in the production and distribution of their present products widely used in connection with burring, polishing, buffing and plating and the general field of finishing of metal and non-metal articles.

Du Pont's Service Lab. for Users of Wood Finishes

A field service laboratory has been established at the Roanoke, Va., warehouse of the Finishes Division, E. I. du Pont de Nemours & Co., to assist in solving finishing problems of the Southeastern wooden furniture industry.

E. L. Andrews who heads Du Pont's new field service lab. at Roanoke, Va., for wood finish users in Southeastern area.

The Du Pont Roanoke Field Service Laboratory is under the supervision of E. L. Andrews, and is staffed by experts in wood furniture finishing. It is located at Virginia Ave., Memorial Bridge, Roanoke 15, Va.

Mr. Andrews, who has been with the Du Pont Finishes Division 20 years, was transferred to Roanoke from Connecticut, where he was special industrial salesman. He was graduated with a bachelor's degree from Virginia Polytechnic Institute.

"WHY DIDN'T SOMEBODY TELL ME,"

says Old Man Corrosion,

"THAT THESE THINGS ARE PROTECTED WITH **PERMITE ALUMINUM PAINT?"**

● No sooner does your finished product see the light of day than Old Man Corrosion goes to work on it. But when products are protected by Permite Ready-Mixed Aluminum Paints, Old Man Corrosion wishes he'd tackled an easier job. For the multiple layers of pure aluminum flakes form a hard, durable, metallic coating that holds its own against every corrosive force.

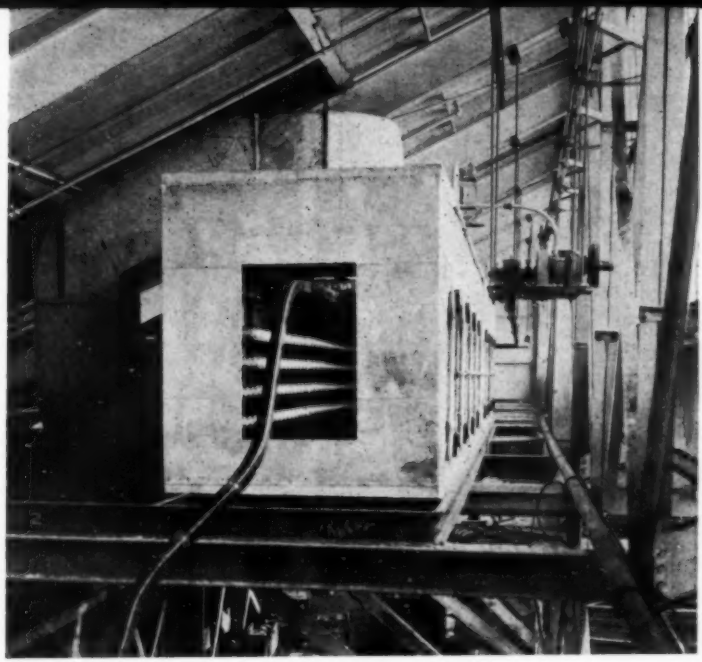
Although our full line of Permite Ready-Mixed Aluminum Paints is not immediately available, we will resume complete production at the first possible moment. Meanwhile, we are offering a varied line of Permite Industrial Finishes, formulated to government specifications. And never hesitate to call on the experienced Permite chemists whose services are always at your disposal. Quotations promptly submitted.

ALUMINUM INDUSTRIES, Inc., Cincinnati 25, Ohio

Permite Paint Division

The Permite Line of Industrial Finishes includes Synthetic Enamels, Lacquers, Lacquer Enamels, Varnishes — also Government Specification Finishes.

PERMITE READY MIXED ALUMINUM PAINTS



A combination infra-red and convection oven before installing the lamps, and without conveyor hooks. Note location under saw-tooth roof to save space.

Infra-Red vs. Convection

OVENS FOR DRYING PAINT COATINGS

WHETHER to use radiant or convection heating is probably the most frequent question asked by customers of the oven industry. Since the beginning of the war technical magazines have been full of praise for electric infra-red radiation, but marketing experience indicates that not enough facts and comparisons have been published to serve as a guide for the every-day user; furthermore, confusion arises when ceramic radiant burners are also taken into consideration.

A few articles giving pertinent data are highly technical and involve mathematical treatments, so that they have not received due consideration by the general public. It is the object of this article to again point out and compare some of the factors which must be considered when deciding

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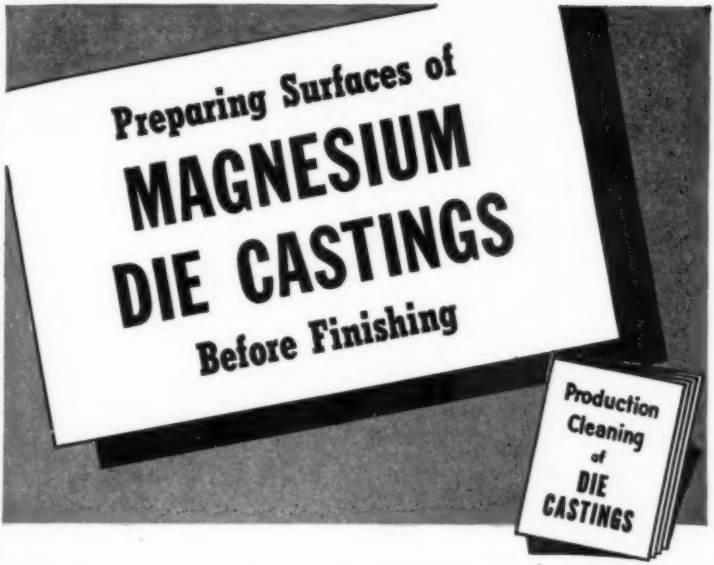
BY J. F. GSCHWIND

Development Engineer

J. O. Ross Engineering Corp.



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the best heating means for an oven in which to quickly dry paint coatings at baking temperatures.

Radiant Ceramic Gas Burner

Then there is the radiant ceramic gas burner which, at times, is also called an "Infra-red gas burner". For oven applications this type of heat producer is generally given the form of cups or troughs which is fed a mixture of gas and air. If manufactured gas is used, the combustion, depending on the burner pressure, heats up the refractory ceramic anywhere from 1700° to 2100° F. Radiation depends on temperature only. It is easy, therefore, to check approximately the total amount of radiation by means of the Stefan-Boltzmann equation. [Editor's Note: The mathematical equation is omitted here because: 1) Our printers haven't facilities for printing the characters, and 2) It is probably so technical that most I. F. readers would be disinclined to study it carefully.]

★ ★ ★

Editor's Note: This article, on a subject that is to some extent controversial, was sent in by an engineer who is with a well known manufacturer of industrial ovens (convection, infra-red and a combination of the two) for drying and baking paint films on metal surfaces. Statements in the article do not necessarily represent any opinion or preference by this publication or its Editor.

For a measured cup burner temperature of 1700° F., the total radiation, according to the equation, is 1025-Btu. per hour. This burner temperature corresponds to a manufactured gas consumption of 12½-cu. ft. per hour and a 5/1 air mixture; the heat input is 530-Btu. per cu. ft. x 12½-cu. ft. per hour equals 6625-Btu. per hour. The total radiation, expressed as a percentage of the heat input is 1025 divided by 6625 or 15½%.

At higher burner temperatures, with larger gas consumption, the percentage of radiation becomes even less. Radiant gas burners can therefore simply be considered as improved flame burners; as such, depending on the application, they may or may not be used to advantage in an oven; in any case, they need not further concern us in this article . . . .

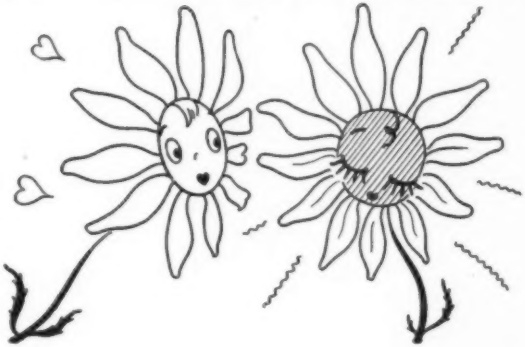
Electric Lamps Supply Radiant Heating

Electric lamps are the most commonly used infra-red heaters. The major part of the heat output is in the form of radiant energy, and convection is negligible. According to manufacturers of electric heating lamps, the average radiant heat output is about 80% of the total energy input. I shall refer to this matter later.

Infra-red rays are part of the electromagnetic spectrum which also comprises X-rays, ultraviolet rays, light rays, etc. All of these differ by their wave lengths, although they are subject to similar laws of propagation. Their absorption varies radically. The radiant heat of electric lamps is predominately characterized by wave lengths between 8000 and 5000 Angstrom units.* *(Turn to p. 50)*

*See G. E. Review for December, 1939, and G. E. Bulletin LD-1; Mazda Lamps.

"FULL MANY A FLOWER IS BORN TO BLUSH UNSEEN"



. . . but a blush in the coating of your product will be seen again and again and again. Fortunately, blushing lacquers are practically a thing of the past. Modern formulations use larger quantities of high-boiling, flow-producing solvents such as Butanol and Butyl Acetate . . . less of the low-boiling solvents that tend to cause blush and orange peel when used in too large proportions. Ask your supplier about the lacquer finishes which are now available.

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The concentration of radiant energy upon a unit area, or intensity, is a determining factor for the rate of heating, and the maximum temperature obtained. For a given lamp size the intensities, in turn, are a direct function of the lamp spacing; that is, their center-to-center dimensions. The closer the lamps are to each other, the greater the intensity (measured in watts per sq. in.)

Conversion factors are:

One kilowatt hour equals 3413-Btu. (British thermal units.)

One watt per square inch equals 491½-Btu. per hour per square foot.

The illustration marked Fig 1 shows the relationship of lamp size, spacing and intensity of distribution for reflector-type lamps.

If parabolic lamp reflectors were used, giving complete and perfectly parallel projection of the rays, the distance between the lamps and the work in process would not matter. However, the present status of lamps and reflector design is quite the opposite. Instead of trying to obtain uniformity at the source, reflectors are built to disperse the radiation emanating from a concentrated source. A diligent arrangement and grouping of heat lamps and reflectors into lamp banks assures proper and uniform overlapping of individual radiation patterns. Since parallel beam reflectors are not used, the distance between the lamp centers and the distance between lamp and stock must be taken into consideration. The extreme condition, of course, is a pin point source, in which case the surface intensity changes inversely as the square of the distance from the source.

Because of tarnishing due to oxidation and deposits, amalgamation of the coating with the base metal, and mechanical frailness, open reflectors have not worked out well. The higher the oven tem-

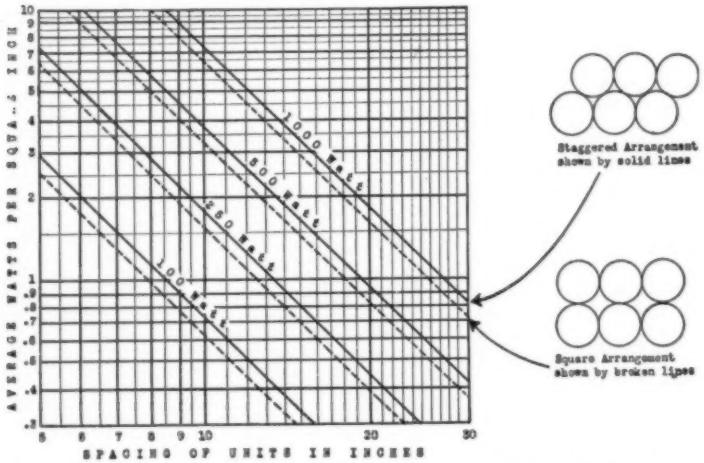

Fig. 1—Intensities of large lamp banks on flat working plane 12-in. distant, assuming 65% efficiency. Courtesy of the General Electric Company.

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peratures, the worse for wear will be the reflectors, which are generally made of metal. That is the reason why the internal, non-tarnishable bulb reflector was developed; it has been quickly and generally accepted.

Reflector bulbs can be grouped closely, which is not the case when lamps with individual reflectors are used; the latter have minimum diameters of 8 to 9-in. so that average intensities, even with 1000-watt lamps, are no more than those obtained with closely spaced 250-watt lamps. This is clearly shown in Fig. 1. Reflector bulbs as large as 375-watts are available now and larger bulbs, giving higher intensities, are expected to be available soon.

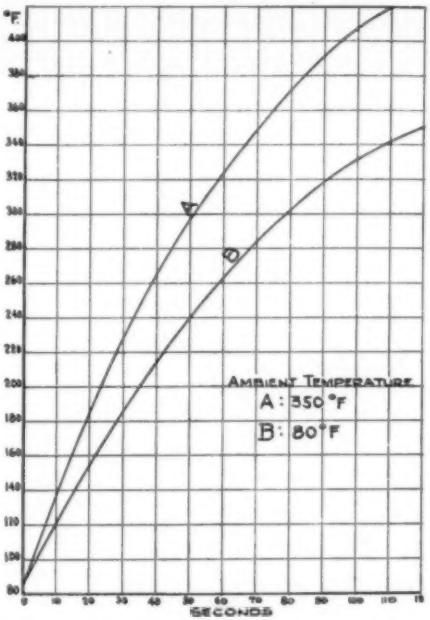

Fig. 2—Temperature rise of 20-gauge black iron panels for identical radiation.

How Reflection of Lamp Rays Affect Conditions; Results

Besides intensity, the next important factor is the absorptivity of the painted surfaces to be baked, which depends on surface conditions, as well as on the atomical structure. Physicists call a surface smooth when its irregularities are small compared to the wave length of the incident ray; hence, the shorter the wave lengths, the smoother must be the surface. If, for example, a polished surface reflects light, it will be a good reflector for infra-red rays, which have a longer wave length; but an iron mirror, reflecting light, is not a good enough reflector for X-rays, which even penetrate the metal due to their extremely short wave lengths.

A rough surface that reflects completely all of the incident rays is called "white", and a rough surface that absorbs all incident rays is called "black". When speaking of infra-red, the definition of a "white surface" does not necessarily mean white to the eye. The absorptivity of a white paint, for instance, can be increased by a minute addition of cobalt, which is not visible in the final product. The described conditions make infra-red heating a function of the chemical structure, the surface conditions, and the form of the

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product. The oven manufacturer has, except for voltage regulation, little or no practical means of changing the quality of the lamp radiation, nor can he alter the characteristics of the products he is asked to treat in his oven; nevertheless, he must apply the laws of thermodynamics when designing an oven if he doesn't want to run the risk of producing obsolete equipment.

Quick Uniform Heating Is Desirable in Baking

Industrial ovens (in contrast to furnaces) require generally quick and uniform heating of the work. F. M. Tiller and H. J. Garber, of the University of Cincinnati, have a published article on "Infra-red Radiant Heating" in July 1942 issue of *Industrial & Engineering Chemistry*. Their article contains numerous mathematical equations and formulas, one of which has to do with time and temperature for infra-red heating of thin metal stock. [Editor's Note: Inasmuch as the formula is quite complicated and highly technical, we are omitting it.] A study of this formula indicates that the temperature rise as well as the final temperature depends upon the ambient temperature (temperature of air surrounding the parts or products in oven.)

The heating curve for a 20-gauge black iron panel exposed to the same number and same disposition of infra-red lamps but, different ambient temperatures, is shown in Fig. 2. Curve A is much steeper than curve B and it takes 70% longer for B to reach a temperature of 350° F. This effect can be usefully exploited in a conveyorized oven by providing total enclosures and a controlled atmosphere. Oven length for condition A will then be roughly one-half of that required for condition B. In a batch oven the heating cycle will be shortened proportionately. It is quite often claimed that infra-red ovens do not require any heating-up period before baking starts. That is only true in a limited sense, and in particular for open lamp

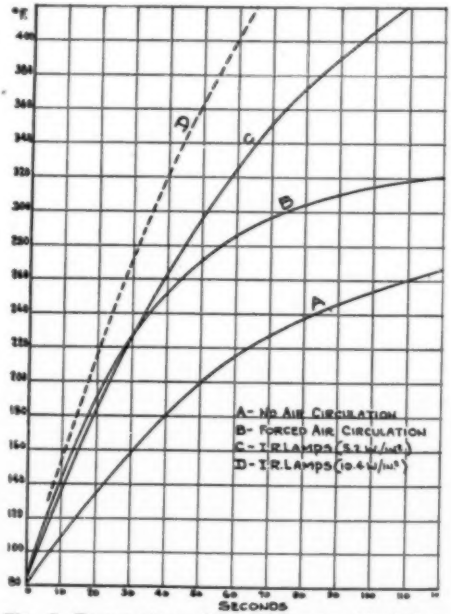

Fig. 3—Temperature rise of 20-gauge black iron panels for equal ambient temperature of 350° F.

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banks which, as can be concluded from Fig. 2, have a low thermal efficiency.

Enclosed and Insulated Ovens Retain Heat

Today it is general practice to enclose and insulate steam heated equipment and ovens. Why the necessity for insulating infra-red ovens is not generally recognized can hardly be explained, especially when we consider the high cost of electrical energy*. We have seen that the form of the products being baked has a definite influence upon uniform temperature rise. Uneven heating temperatures will result if the stock has shadowy corners and varying wall thicknesses. These undesirable conditions will be more pronounced for non-conductors and will be less noticeable for good conductors, such as metals, hence it is advisable to keep oven temperature reasonably high to help even up temperature variations of the stock.

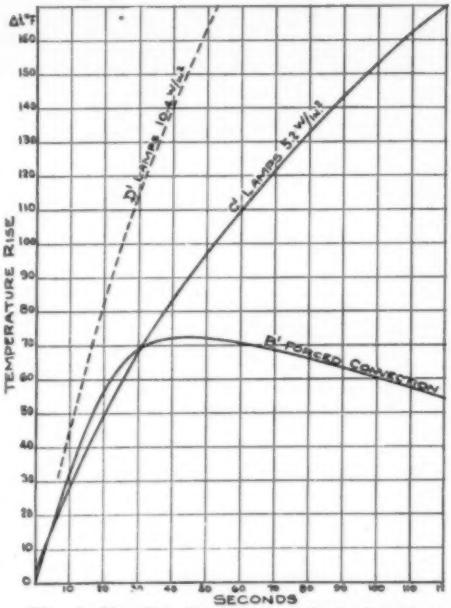

Fig. 4—Showing the booster effect of various heating means. Note curves B', C' and D'.

We have previously seen that the infra-red efficiency of the electric bulb is approximately 80%; the remaining 20% is given off in the form of light and convected heat through the bulb and socket. An enclosed oven will help to capture some of the heat which otherwise is lost in open lamp clusters.

Regardless of how well an infra-red lamp oven is designed, some of the radiation will not hit the painted surfaces to be baked. However, it will hit the walls of the enclosed oven which, if sufficiently reflectant, will redirect the rays toward the painted products. The walls will naturally heat up since they are not perfect reflectors. All of this constitutes more reasons for proper insulation. The work in process, as well as the heated oven walls, the conveyor, etc., transmit heat to the ambient (surrounding) air by convection.

Need for Oven Ventilation Enters Bake-Finish Picture

Unless suitable ventilation is provided, some definite stratification will occur. This is particularly true for high ovens that have

*Some infra-red ovens are insulated, see page 58, August IF.—EDITOR.

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Fumes and flammable volatiles are liberated during the process of baking various paint coatings on metal surfaces. They should not be permitted to collect in an oven, nor should they be tolerated in working rooms and factories. Proper exhaust, fresh air makeup and ventilation go hand in hand, and must be provided to conform with the National Code of Fire Underwriters and many local ordinances.

Totally enclosed ovens incorporate the electrical wiring, since the lamp bulbs are mounted inside. Proper electrical design and selection of suitable material, especially wire insulation, are necessary. Adequate ventilation will keep the temperature within reasonable predetermined limits, and will properly condition the atmosphere.

After this short discussion of some of the factors governing infra-red heating, let us investigate the main reason which warrants its application.

Analyzing Factors That Influence Choice of Heat

As previously mentioned, electrical energy is generally costly, therefore, its use, must be justified by a gain of processing time, by a saving of space, by a saving of installation cost, or by a better product. Time savings generally mean savings of space, and that means shorter ovens. Initial cost savings depend on many factors, and it is difficult to make general comparative statements. It may be said, however, that for reasonably large installations the cheapness of open lamp clusters is obtained at the expense of thermal efficiency or high operating costs.

Better products are claimed in many cases where the use of infra-red heat prevents case-hardening, where it eliminates internal heat stresses and warping, where it produces quicker polymerization of coatings and better finishes. The main reason for infra-red heating in ovens is unquestionably the consistently rapid energy transmission, in comparison with standard convection methods; the latter show a good heat transfer rate as long as there is a large temperature difference between the air and the work in process. The rate decreases rapidly, as this difference becomes smaller.

Studying Charts of Time-Temperature Curves

A number of time-temperature curves for a 20-gauge black iron panel are shown in Fig. 3. The tests were made with commercial equipment for the following representative conditions:

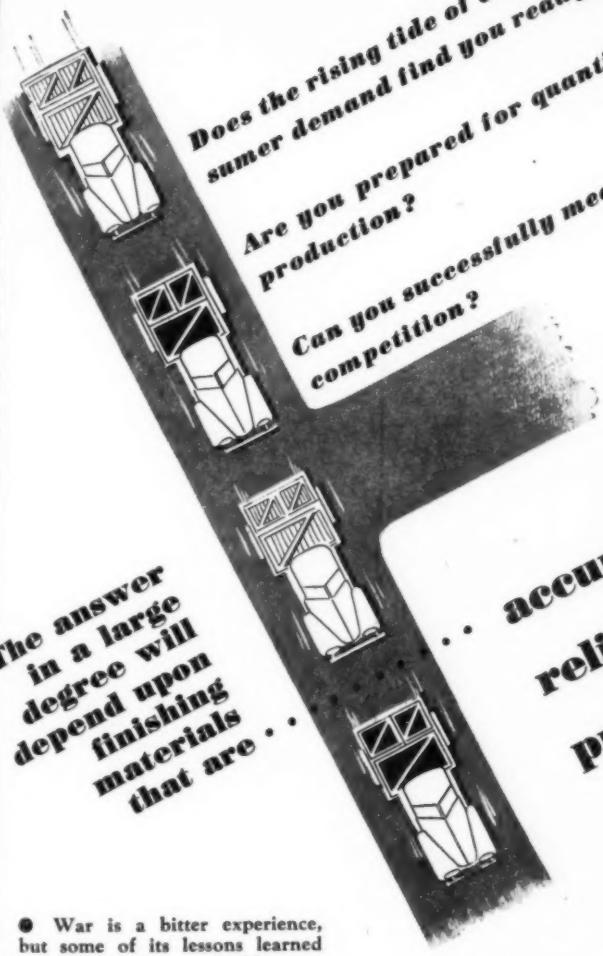
A) 345° oven; no circulation.

B) 345° oven, air impingement on one panel side.

C) 350° oven, infra-red lamps on one panel side (about 5.2-watts per sq. in.)

D) 350° oven, infra-red lamps on one panel side with doubled intensity (about 10.4-watts per sq. in.) This curve was obtained by computation.

For explanatory reasons, let us call curve *A* "static heating" and curves *B*, *C*, and *D* "dynamic heating"; in the latter cases, air motion or infra-red radiation is used to boost the heat transfer. As previously mentioned, the ambient (surrounding) oven temperature has a direct bearing on the time and temperature relationship, and the tests were therefore performed at comparable oven temperatures. Curve *A* includes some circulation, since no effort was made to elimi-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nate natural convection currents. However, this does not greatly change the following general conclusions, as *A* serves as the comparative basis for all cases which we consider.

The heat retention by the test panel is directly proportional to the temperature rise. By deducting the "static" heating curve *A* from curves *B*, *C*, and *D*, we obtain new curves *B'*, *C'* and *D'* (see Fig. 4) showing the booster effects. It becomes at once apparent that up to 30 seconds there is relatively little difference between radiation and convection, but as *B'* levels out and then slopes toward zero, *C'* and *D'* continue to climb steeply. The "dynamic" heat input for *C'* at 80 seconds, is just about twice that of *B'*, and at 117 seconds it increases to three times. For curve *D'*, the conditions are even more in favor of radiation.

The described conditions are just as apparent when comparing the time temperature curves. *C* reaches 320° F. at 58 seconds, while it takes 120 seconds for *B*, or twice as long. *D* requires only 41 seconds, or roughly one-third of *B*. For work that cannot stand a relatively high surrounding temperature, the oven temperature of 350° F. would have to be lowered, producing heating conditions which are more in favor of infra-red.

Exaggerations; Facts; Conclusions; Results

When comparing infra-red versus convection for metal finishes, a shortening of curing cycles from 10 to 15 times is often claimed. The above tests disprove such stupendous results on a thermal basis; the explanation lies in the use of different chemical paint compositions rather than in the mode of heating. Such exaggerations notwithstanding, the conclusion follows that infra-red radiation, due to its high thermal potential, is particularly suitable for rapid and intense heating. Infra-red, by its very nature, can be focused and concentrated upon painted surfaces of the work, producing excellent results by shortening heating cycles, permitting shorter ovens and, consequently, space savings and frequently lowering installation costs.

Theory and practice so far are definitely pointing toward combination infra-red and convection ovens which are totally enclosed and properly insulated. Such a design is not only economical but it makes possible the control of ambient oven temperatures and provides positive exhaust.

The basic Tiller and Garber formula [omitted here] incorporates the combined heat exchange for radiation and convection . . The combination ovens, as advocated, maintain a controlled inside temperature, so that the heat input is a combination of radiation and convection until the stock has reached the air temperature. This fact must be considered, especially when there is a rapid airflow over the work in process.

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The Rinshed-Mason Co., 5935 Milford St., Detroit, Mich., manufacturer of R-M paints, enamels, varnishes and lacquers, announces the appointment of Mr. Frederick G. Weed as Executive Vice-President. Mr. Weed will assume the duties of management, relieving Mr. Herbert W. Mason who will remain as President of the company.

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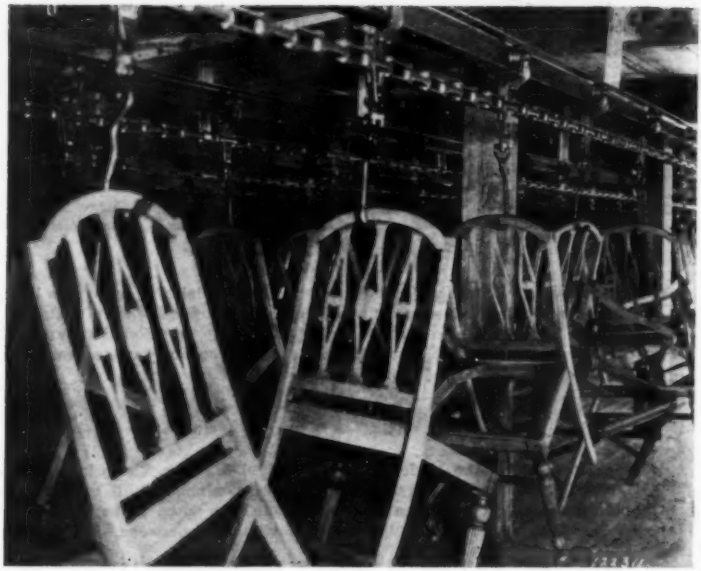

Finishing Chairs on a Production Basis

BY H. W. CHESTER

Chairs can be and are being entirely finished on overhead conveyor systems. Many chair factory finishing departments are fully conveyorized, with the result that production is increased and costs reduced.

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(Continued on page 68)

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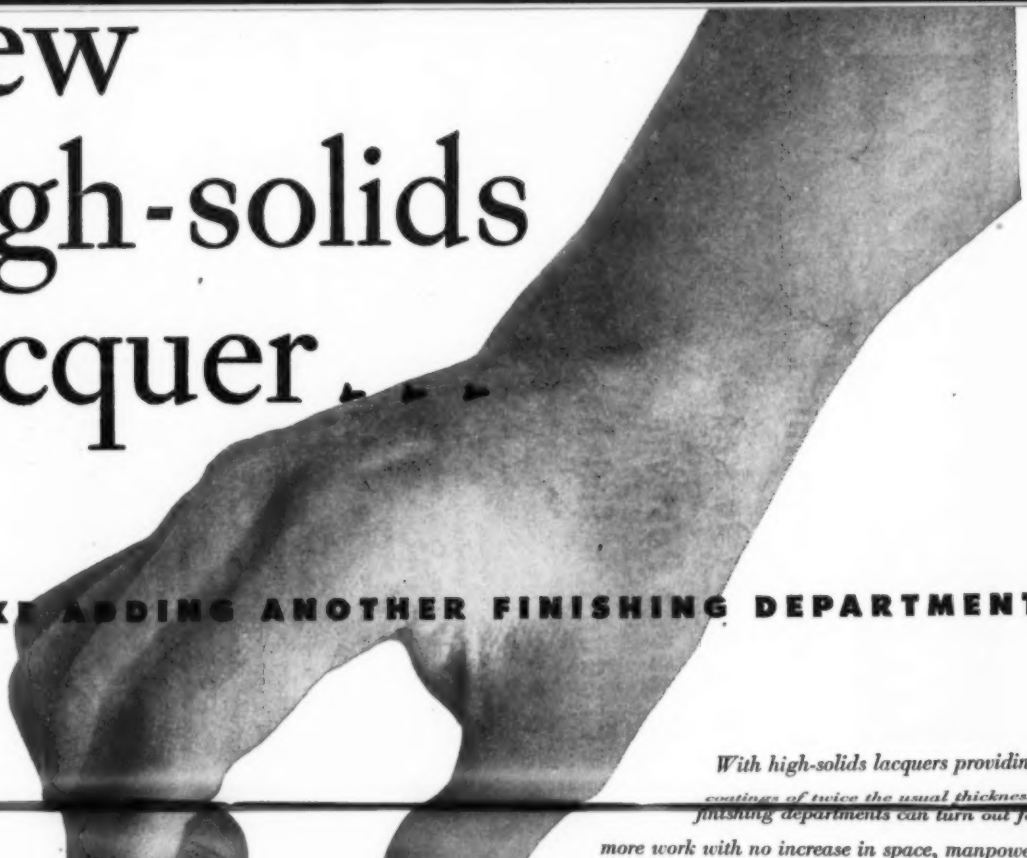
SEE OUR INSERT IN SWEET'S NEW PRODUCT DESIGN FILE

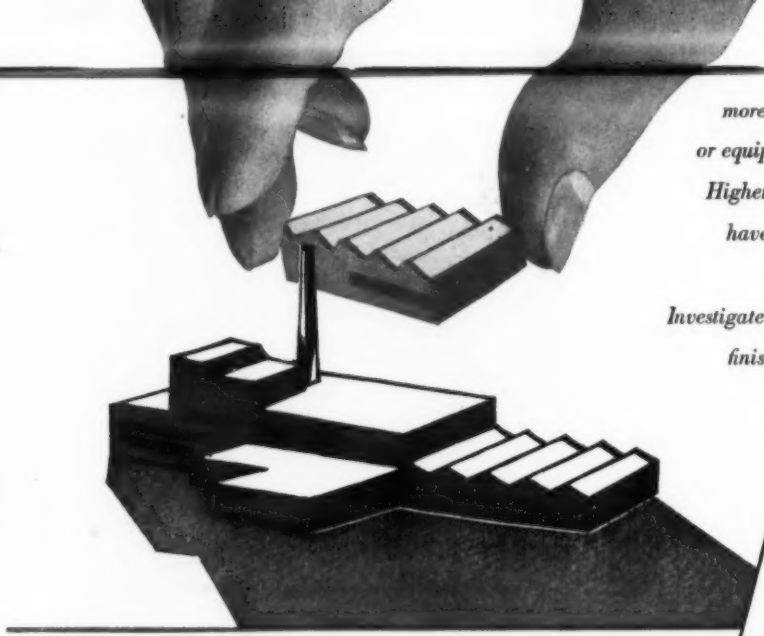
QUALITY FINISHES SINCE 1858

New high-solids lacquer . . .



>> LIKE ADDING ANOTHER FINISHING DEPARTMENT

With high-solids lacquers providing coatings of twice the usual thickness, finishing departments can turn out far more work with no increase in space, manpower,



With high-solids lacquers providing coatings of twice the usual thickness, finishing departments can turn out far more work with no increase in space, manpower, or equipment. Each coat now does the work of two! Higher percentages of lower-viscosity nitrocellulose have made this possible. Increased thickness and protection are noticeable only after drying. Investigate high-solids lacquers now . . . for high-speed finishing of metal, wood, fabric, rubber, leather, paper, plastics . . . and see what time and money you can save.

ASK YOUR LACQUER SUPPLIER for complete details and application data on these new time-and-money-saving lacquers, as they become available. Hercules does not make high-solids lacquers, but concentrates on the production of the highest quality nitrocellulose from which they are made.

CL-54A

HERCULES-

Cellulose Products Department

HERCULES POWDER COMPANY

INCORPORATED

less because of the labor saved and the fact that the chairs in process are moving steadily and continuously forward from one operation to another. No congestion or "bottleneck" occurs at any point along the line. The time allowance for each operation and drying period is adequate, but because of conveyorization each of these is really accelerated.

The detailed operations and drying periods of a typical finishing setup in a completely conveyorized chair factory are as follows:

Inspection, Dusting, Spray Stain and Wash Coats

The chairs are carefully inspected for dent bruises, quality of sanding, etc. All dust is blown from them before they are hung onto the conveyor. (This continuous overhead chain-type conveyor travels through one end of the cabinet assembly room.) Chairs then travel through a stain spray booth (No. 1) where a coat of stain of the desired color is sprayed on. (If a walnut finish is desired, only the gum wood parts are sprayed with a non-grain-raising stain to blend them with the walnut veneered parts.)

Next they move along for 15 minutes through an oven wherein a temperature of 125° F. is maintained. When they leave this oven the chairs travel through No. 2 spray booth where a wash coat consisting of three parts alcohol to one part white shellac, is sprayed on. (If a walnut finish is desired, this wash coat is tinted to the desired color with non-grain-raising stain.) After leaving the wash-coat spray booth the chairs travel for 15 minutes through another oven wherein a temperature of 120° F. and a relative humidity of

Enough time, but not too much, is allowed for each operation along the line.

FINISHING
THE NEW PRODUCTS
THE R. C. MAHON COMPANY
DETROIT 11
CHICAGO 4

20% is maintained. Leaving this oven, the chairs are sanded with No. 5/0 finishing sandpaper.

Dip Filler; Rub, Brush and Blow Off the Excess

Chairs are then taken from the chain, dipped in a vat containing a filler mixture which consists of 4-lbs. of filler to each gallon of naphtha. The chairs are then hung back on the chain and all excess filler is rubbed off, first with tobacco cloth, then with a soft cheesecloth.

An alternate method of filling is to let the conveyor itself dip the chairs. A long dip tank and drain board are centered under the conveyor line. The conveyor rail must be bent down and then up again to allow the chairs to be automatically lowered into and then lifted from the long dip tank. Complete conveyorized dip-filling can be employed effectively on chairs that are filled and finished all over — that is, chairs on which all wood surfaces are exposed when finished. On chairs to be upholstered, where perhaps only the wood feet and arms are finished, hand dipping or brush application is generally preferred.

In setups where the filler is applied by dipping, it is practically necessary to agitate or stir the contents of the tank to keep the pigment in suspension; in other words, to prevent the solids in the filler from settling to the bottom of the tank.

Accumulations of excess filler are picked from crevices and inside corners with an ordinary "shoe handle" bristle brush. Excess filler that cannot be removed from corners, etc., by wood picks and brushes, is blown out with an air duster. Then follows a final wiping with a soft cloth; and careful inspection to see if all surplus filler is properly cleaned off. Chairs then travel through an oven for 1¼-hours. A heat of 150° F., with a relative humidity of 30%,

Spraying chairs on the conveyor line. Photograph, courtesy of Palmer-Bee Co.

...to give you MORE AIR PER DOLLAR

"Built better by Kellogg-American" means MORE COMPRESSED AIR PER DOLLAR. It's simple arithmetic. How much compressed air the compressor actually delivers—not the displacement—tells the story in dollars and cents. Actual air delivered to the tank (compressed air) is always *less* than displacement. Therefore, the actual compressed air delivered is the true rating of the capacity of a compressor—the rating you should *know* before you buy. "Built better by Kellogg-American" means more cubic feet of air per kilowatt hour. Volumetric efficiency is high. Operating costs are low. Kellogg-American delivers *more compressed air per dollar.*

Brake Shoe

KELLOGG DIVISION

ROCHESTER 9, N. Y. • LOS ANGELES 6, CALIF.

is maintained in this oven. Leaving this oven, the chairs travel for 15-minutes in ordinary room air to allow time for cooling.

Lacquer Shading Stain or Tinted Sealer Glaze

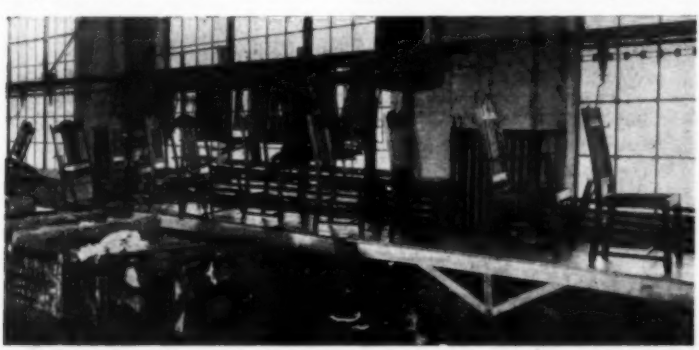
Chairs then pass through No. 3 spray booth where a lacquer shading stain is sprayed over all off-color parts such as posts, etc. All parts are uniformed and blended in to give the complete chairs a suitable matching color effect for subsequent finishing coats.

Next the chairs enter spray booth No. 4 where a coat of lacquer sealer is sprayed on. (For mahogany chairs a coat of a special tinted sealer glaze is sprayed on. This sealer has high grade dyes incorporated into it, and it gives a glazed effect. This eliminates hand blending or glazing.) Chairs are allowed to travel for 35 minutes at room temperature to allow time for drying the coat of lacquer sealer or sealer glaze. Then follows sanding with No. 6/0 finishing sandpaper. All sand dust is then blown from the chairs with an air duster, as they pass by an employee's work station.

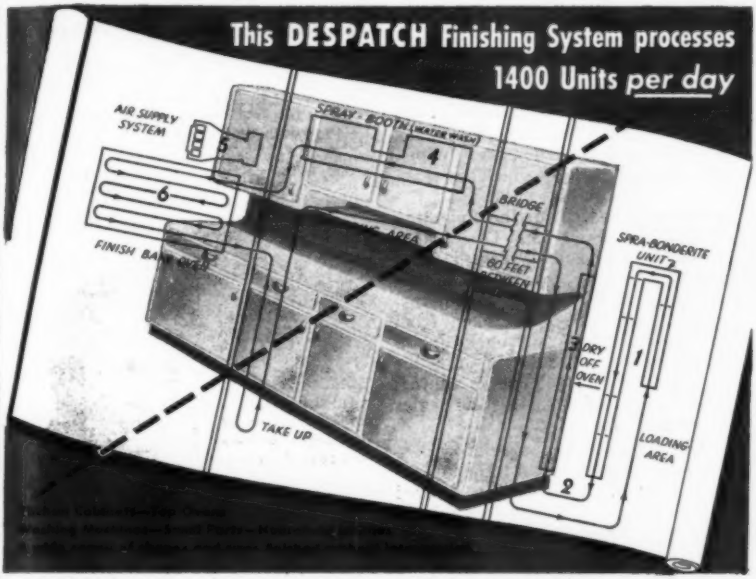
Now the chairs pass through spray booth No. 5, where a final coat of either water-resistant semi-flat varnish or lacquer is sprayed on. Then they travel for 1½-hours through an oven in which the temperature of air is 150° F., with a relative humidity of 35%. After leaving this oven the chairs travel for 15 minutes through a cooling tunnel. Then they are lifted from the finishing conveyor and hung onto the warehouse conveyor. They travel into the warehouse where they are stacked six high and allowed to dry overnight. Then comes hand rubbing with paraffin oil and pumice, followed by polishing.

Final Coat, Followed by Rubbing and Polishing

If a high polish is desired, an abrasive polish is used. If a dull rubbed finish is desired, a "clean up" polish containing no abrasives is used. Using this finishing procedure, conveyorized as described here, 22 men will finish 1200 chairs in an 8-hour day. They have finished as many as 1400 and 1500 chairs per 8-hour day on this same system. *(Continued on page 74)*



For some operations like wiping and rubbing, it is best to let the chairs slide along, right side up, over a smooth platform. Photo, courtesy Palmer-Bee Co.



Difficult Space Problem Solved by DESPATCH Engineers

Utilizing 2 buildings, the roof of a third and crossing a 60 ft. street, Despatch engineers designed and installed this endless conveyor finishing system that produces 1400 units per day. The conveyor alone is over 1000 ft. long.

SINGLE PLAN—SINGLE RESPONSIBILITY

This manufacturer got a complete finishing system that cuts costs to a minimum by having Despatch specialized engineers do the entire job of designing and installing the system to fit his production requirements and plant facilities.

You too, can profit by having Despatch engineers take the full responsibility for planning and installing your finishing system. Then you get space saving lay-out—efficient conveyor route—proper selection and arrangement of component parts to make a unified system that gives maximum production at a minimum cost.

Send this coupon for details ▶▶

All of the equipment for this new finishing department was planned, selected and installed by Despatch engineers. Individual items, numbered to correspond with the floor plan, include . .

1. **SPRA-BONDERITE UNIT**—A 6-stage unit.
2. **AIR BLOW-OFF**—Removes surplus moisture.
3. **DRY-OFF OVEN**—Dries completely following Bonderizing.
4. **SPRAY BOOTH**—Water wash type, working length 50 feet.
5. **AIR SUPPLY UNIT**—For supplying air to spray booths.
6. **BAKE OVEN**—Despatch direct gas-fired oven, approximate length of travel 225 feet.

Work stays on same monorail conveyor; eliminates manual handling.

DESPATCH
OVEN COMPANY MINNEAPOLIS 14 MINNESOTA, U.S.A.

DESPATCH OVEN COMPANY
619 SE 8th Street, Minneapolis 14, Minn.

☐ Send more details about Despatch's engineering service in supplying Finishing System equipment.

☐ Please survey our plant without obligation and recommend new equipment for our Finishing Department.

NAME_____

ADDRESS_____

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Shorter or Different Schedules for Cheaper Chairs

For manufacturers who have no conveyor system and who build all hardwood chairs such as gum, maple, poplar, etc. (cheap and medium priced chairs), there has been developed a new "no wipe" non-grain-raising stain. This stain saves a lot of labor and at the same time speeds up the finishing. Chairs are taken from the cabinet assembly room and dipped in a tank containing this stain in the desired color—walnut, mahogany, maple, etc. They are taken from the dipping tank, set on a drainboard and allowed to dry for five minutes. They require no wiping. Then a coat of special glaze sealer is sprayed on.

This sealer has special transparent pigment dyes incorporated into it, and it gives the desired glazed effect. This eliminates hand glazing. After 40 minutes of drying time the chairs are sanded with No. 6/0 sandpaper and then the final coat of varnish or lacquer is sprayed on.

For cheap chairs it is possible, by using a satin-finished flat varnish or lacquer, to eliminate all rubbing of the lacquer finish. These chairs can be stained, sprayed with sealer glaze, sanded and lacquered the same day; and if some forced drying is used, they can be shipped the same day they are finished.

F. Chilson, Industrial Consultant Moves to Park Avenue

The New York offices of Francis Chilson, Industrial Consultant, were recently moved to 101 Park Ave. Research offices are in the Harwood Building, Scarsdale, N. Y., and field offices in Chattanooga and Pittsburgh.

A specialist for the chemical drug, cosmetic, paper, and packaging industries, the Chilson offices were formerly at 101 W. 31st St.

Becomes Advertising Manager of Roxalin Flexible Finishes

Roxalin Flexible Finishes, Inc., of Elizabeth, N. J., announces the appointment of Robert Collyer as advertising manager.

Mr. Collyer will supervise Roxalin's expanded postwar promotion of product finishes and technical coatings engineered from the basic plastics and their co-polymers. In this field Roxalin is one of the nation's leading producers and many new coatings developed during the war are now ready for introduction to consumers' lines.

Robert Collyer will supervise the promotion of Roxalin's postwar product finishes

Mr. Collyer brings to the Roxalin organization wide experience in advertising, merchandising and modern industrial design. His interest in packaging led to the war time development of the life jacket dye marker used extensively by the Army and Navy to speed rescue at sea.

New Rustproofing Company Headed by R. R. Tanner

Organization of the Tanner Chemical Co., for the manufacture of industrial chemicals for rustproofing processes, is announced by Robert R. Tanner, president. The firm is located at 109 E. Nine Mile Road, in Ferndale, with laboratories in Berkley, Mich.

Robert R. Tanner is a well known figure in the rustproofing field. He was formerly Director of Research for a nationally known rustproofing company, and he is known as the inventor of a well-known, extensively used rustproofing process, as well as some 20 other patents in the rustproofing field.

Mr. Tanner announces that the principal product of his new organization will be "Tannerite" and the process will be known as "Tannerizing". According to Tanner, "the process produces phosphate coatings on various metal surfaces and offers many advanced features in effectiveness and efficiency."

"If I were in your shoes, I'd always remember women buy with an eye for beauty."

The lady has a point. Housewives control the family purse, and they buy for *beauty* as well as usefulness. Your products can have *extra beauty* if finished with *WAX-O-NAMEL*, the patented wax-impregnated enamel! WAX-O-NAMEL adds rich luster . . . affords *extra protection* against "shopwear" and handling. Merchandise finished with WAX-O-NAMEL keeps that "showroom" look longer . . . doesn't dirty readily . . . and, when necessary, cleans easier.

WAX-O-NAMEL can be applied and dried by any conventional method. It can be used on any surface suitable for ordinary enamel. WAX-O-NAMEL labels and tags will be made available. Teamed with your label, they will add *extra* sales appeal to your products.

This fall, Johnson's national advertising will carry a special message merchandising WAX-O-NAMEL to consumers — telling them to watch for it on the new home equipment they buy. Though not available at present, *now* is the time for you to get the WAX-O-NAMEL story. Write for complete information!

Now Buy Victory Bonds

JOHNSON'S WAX-O-NAMEL *is made by the makers of*

Trademarks Reg. U. S. Pat. Off.

JOHNSON'S WAX *(A name everyone knows)*

S. C. JOHNSON & SON, Inc., Product Finishes Department, Racine, Wisconsin

BUSI
CONTROL END DU
FOR CONSTRUCTI
WPB Plans $1 Billion Volu
for Last Major Industry
Be Released
WPB Cancels 210 Controls,
Radios, Trucks in Full Output
Wide Range of Consumer Goods Going Into
Unlimited Production—End of Curb
Making Is Near
Production of 3,500,000 Radios
ops Controls on Copper
to Speed Civilian Pr
The New Y
STEEL MILLS MOVE
TO CIVILIAN WORK
Near-Capacity Operations for
4 to 6 Months Seen on the
Basis of Orders on Books
ROP IN PRICES EXPECT
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'Immediate'
WASHINGTON,
7 CENTS
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Off Lines Now
New Types Due
G. E. to Make Its
NEW YORK TIMES, MON
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WAR MATERIALS
try Also Wants Word on
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Reconversion Sp
DUPONT
REG. U. S. PAT. OFF.
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AND DULUX
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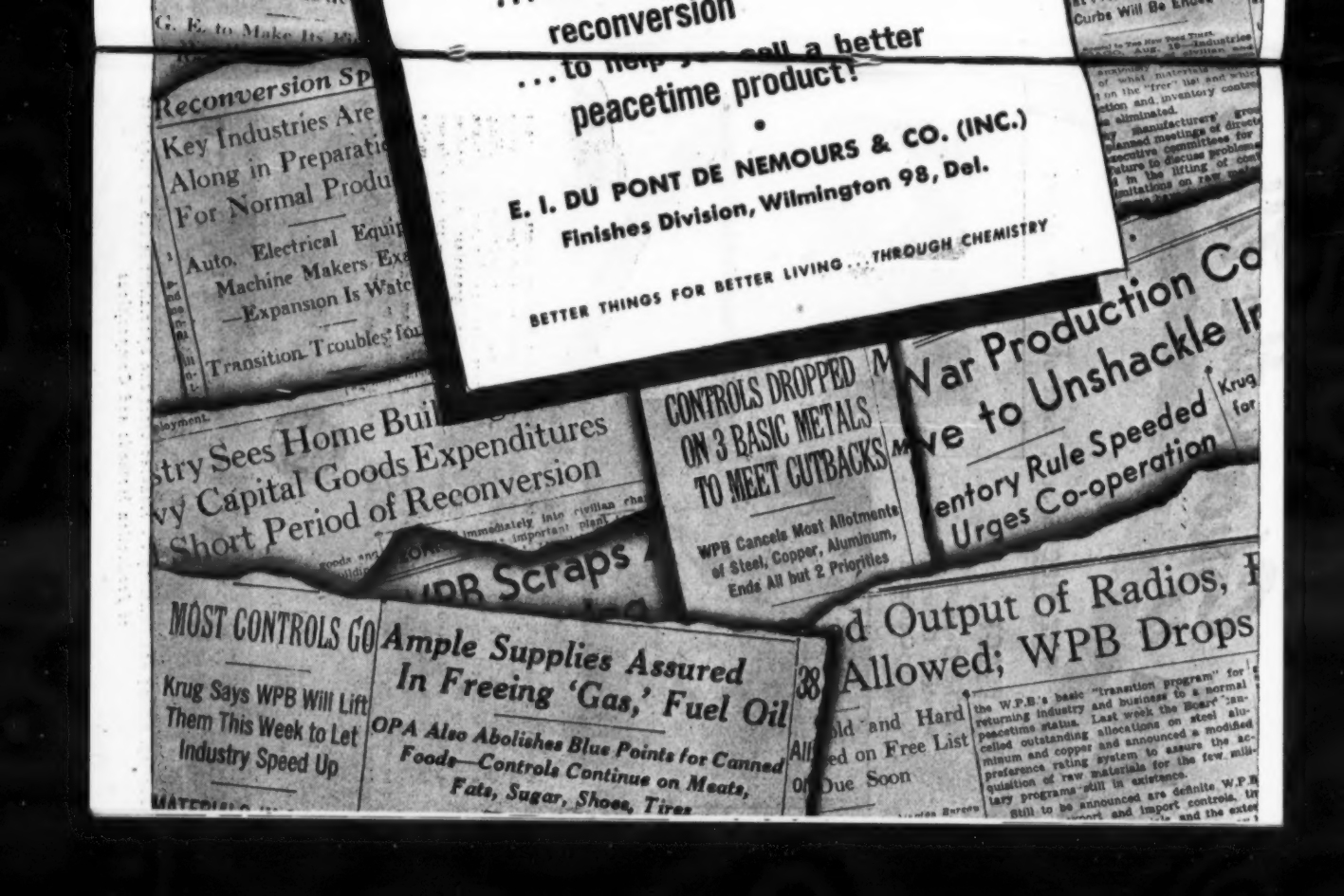
BACK AGAIN
...to help you speed up
reconversion
...to help you sell a better
peacetime product!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Key Industries Are
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For Normal Produ
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vy Capital Goods Expenditures
Short Period of Reconversion
CONTROLS DROPPED
ON 3 BASIC METALS
TO MEET CUTBACKS
WPB Cancels Most Allotments
of Steel, Copper, Aluminum,
Ends All but 2 Priorities
War Production Co
ve to Unshackle I
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Urges Co-operation
MOST CONTROLS GO
Krug Says WPB Will Lift
Them This Week to Let
Industry Speed Up
Ample Supplies Assured
In Freeing 'Gas,' Fuel Oil
OPA Also Abolishes Blue Points for Canned
Foods—Controls Continue on Meats,
Fats, Sugar, Shoes, Tires
d Output of Radios,
Allowed; WPB Drops
Curbs Will Be Enough

LEA Shows the Way

THE PIECES . . . cast aluminum plates

THE PLACE . . .

Pacific Gear Plant
Western Gear Works
Vernon, California

ARMY E NAVY

Here is a scene typical of those in countless plants where finishing operations are carried on. A bench, a wheel, Lea Compound or Learok and a skilled workman deburring, polishing or buffing a piece by a method devised with the help of the LEA Technical Staff.

Yes, the proper finishing of metals and non-metals calls for a thorough knowledge of the behavior of materials during the various finishing operations. It calls for the broadest experience in finishing . . . in burring, in polishing, in buffing. It is here that LEA fits into the picture. We have the "greaseless" and "no-free grease" compositions—lots of different grades, but it is on our technical service and sound recommendations that we have built and are maintaining our reputation as "Authorities on Finishing Operations."

THE LEA MANUFACTURING CO.

WATERBURY 86, CONNECTICUT

Burring, Buffing and Polishing . . . Manufacturers and Specialists in the Development of Production Methods and Compositions

Cleaning, Painting, Drying Set-up For New Metal Products

(Continued from page 36)

coat of paint. Here the spray coating operation is repeated identically except that the inside spraying is omitted. After passing through another infra-red drying tunnel and cooling, the masking rings are removed and the painted tubes are ready for assembly.

Degreasing Small Parts Placed in Special Baskets

For degreasing, the motor parts are placed in a special basket large enough to hold six at a time. These baskets are carried through the 3-stage automatic electric degreaser, suspended to a crossbar conveyor. They return to the operator. Then they are placed on a monorail which carries them through a phosphoric acid dip for approximately two minutes at 180° F., and through a cold water rinse and a hot chromic acid solution. The mechanical problem of having the parts dry prematurely on the monorail when leaving the phosphoric acid is accomplished by means of a humidified tunnel. The nearly 100% humidified atmosphere is maintained with air-pressure-operated nozzles.

Clean motors are transferred to the coating equipment in baskets by a gravity roller conveyor. A special hook is used which masks the inside threads, allows the parts to hang at the best draining angle,

A peak at the electrostatic detearing equipment which removes clinging teardrops of paint from dip-coated parts hanging under an overhead conveyor.

and serves as a handle for the operators to put them on and take them off the conveyors.

Dip Coating Followed by Electrostatic Detearing

The motors are then hung on a monorail for lacquering. For keeping the production equalized, miscellaneous parts are placed on every alternate hook. This conveyor carries these parts through a lacquer dip tank made to conform to the curve of the conveyor track. It then travels over a drain pan for approximately 1½ minutes. The clinging teardrops of paint are removed from the drain points with electrostatic detearing equipment. The work is in the electrostatic field approximately 1½ minutes. Painted parts travel through an infra-red heat lamp tunnel for about five minutes in order to force dry the lacquer coating.

Masking and Spray Painting Outsides of Motors

It is now necessary to coat the outside rim of the motors with aluminum pigment lacquer. This is further complicated by threads that must be masked top and bottom, and still permit the coating of all outside edges. The job is accomplished by passing the conveyor directly over a 2-spindle semi-automatic spray-coating machine. This machine is mounted in a down-draft spray booth which allows complete visibility for the operator. An operator lifts the motors off the hook and places them directly on a special masking workholder which is mounted on a power-driven spindle. The operator then places a mask over the top threads.

With the movement of a small lever the motor starts spinning and two automatic guns spray its exposed surface. The operator repeats this same process on a second spindle while the motor on the first one is being spray coated. This automatic spray operation is accomplished by means of time-delay air-cylinder valves which are adjustable for the time required, and a clutch mechanism.

After removal of the masking tape, the motors are conveyed by gravity roller conveyors to the final assembly, in coordinated time with the other parts of the rockets.

Summary of Important Operations Performed Quickly and Efficiently

The completed product of heavy steel has passed through solvent degreasing, phosphoric acid etch, water rinse, chromic acid bath, one coat of lacquer inside, two coats of lacquer outside, and successive drying without backtracking or any temporary storage of parts. Trucking and time-wasting human effort are eliminated by the combination of several types of conveyors. The entire equipment for all heating apparatus and power is supplied by electrical energy.

The entire system is an excellent example of putting to work modern electrified industry. In a short space of time the Goss Printing Press Co., with the cooperation of the Navy, put this production finishing system into operation. By employing the same principles and certain modern equipment which is now available, similar cleaning-painting-drying setups can be and will be planned and arranged for many peacetime products.

New equipment to do metal cleaning, spraying and baking of finishes, together with means of keeping products clean during processing, is being planned by many progressive manufacturers who are preparing for postwar work.

HERE IT IS – AT WORK!

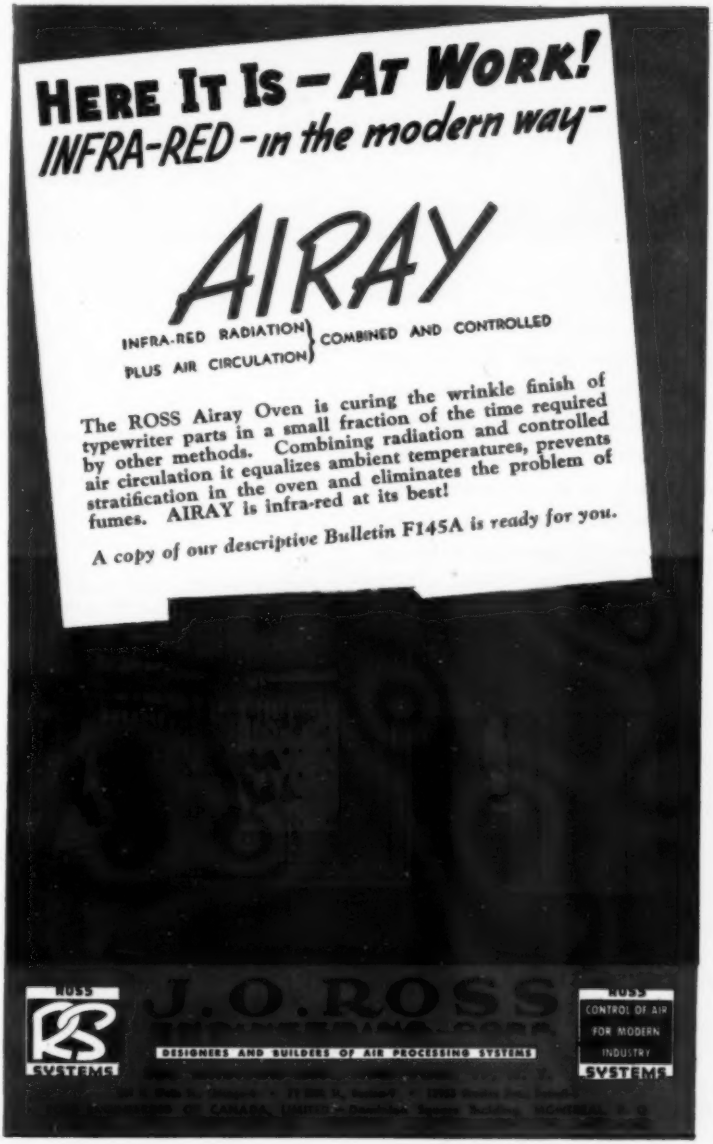
INFRA-RED – in the modern way –

AIRAY

INFRA-RED RADIATION } COMBINED AND CONTROLLED
PLUS AIR CIRCULATION }

The ROSS Airay Oven is curing the wrinkle finish of typewriter parts in a small fraction of the time required by other methods. Combining radiation and controlled air circulation it equalizes ambient temperatures, prevents stratification in the oven and eliminates the problem of fumes. AIRAY is infra-red at its best!

A copy of our descriptive Bulletin F145A is ready for you.



ROSS SYSTEMS

J. O. ROSS ENGINEERING CORP.

DESIGNERS AND BUILDERS OF AIR PROCESSING SYSTEMS

ROSS CONTROL OF AIR FOR MODERN INDUSTRY SYSTEMS

WOOD FINISHING PROCEDURES

by Edwin Hogstrom

Starting with the minimum 2-coat job (sealer; lacquer) this experienced finisher follows up by pointing out what conditions call for additional materials and operations to produce more enduring, more attractive finishes, for all fine furniture, fixtures and cabinets.

IN LOOKING over back numbers of INDUSTRIAL FINISHING Magazine and reading the various authors' ideas in regard to the proper procedure for finishing products made of wood, I notice that there is a difference of opinion as to the right way to finish any specified article. Of course, the selling price of the piece being finished governs, to a considerable extent, the amount of time and material that can be expended on it. I believe that it will be of interest to discuss and review a number of standard procedures, and also to touch on some I have seen that are out of the ordinary but which are practiced in different sections of the country.

The methods to follow are on a lacquer finishing schedule, as most production finishing on wood is done with lacquer. Varnish is used extensively only where adequate room and facilities are available for drying, and where the conditions for clean work permit its use. The solids content of varnish, as a finish on furniture for example, is desirable because the finish can be built up with fewer coats of material as compared to lacquer, but unless conditions are favorable it is less desirable in other respects.

Shellac is frequently used as a sealer coat—when it is available. It is used chiefly where high solids are desired in one application. Shellac is seldom used as a final finishing coat—and then the schedule usually calls for a steel-wooling for the final finish. Of course, there are some custom finishing shops that still do French polishing with shellac. This produces a beautiful finish, but it requires a lot of labor by highly skilled craftsmen. (I wrote articles on this in past issues of INDUSTRIAL FINISHING.) This method of finishing is sometimes used in the reproduction of antiques and in refinishing antiques. In this article, in all steps of finishing, I will specify lacquer as the finish.

In selecting a finish procedure for any given article proposed for production, the type of wood used

What's the Story on Low-Pressure?

A maker of electrical apparatus found that in spraying black baking Japan with Eclipse Low-Pressure Spray Equipment spraying pressure could be cut from 70 lb. to 30 lb. with these results:

1. One gallon of Japan covered 25% more parts
2. Spray booths required cleaning less frequently
3. Heating material was not necessary

Similar results can be shown in your plant by an Eclipse Engineer. Write, without obligation, asking one to call.

ECLIPSE AIR BRUSH COMPANY
392 Park Avenue • Newark 7, N. J.

ECLIPSE

in the make up of the piece will govern the finish used. Take, for example, hard maple, birch and beech. These woods are close-grained and hard in texture. When properly machined and sanded, they will require less finishing material than some of the softer woods of the close-grained type, such as tupelo, sap gum, red gum, pine, redwood, etc. Close-grained woods do not require a filler to fill in the pores of the wood, as do the open-grained variety of woods such as oak, walnut, mahogany, ash, elm and chestnut.

The use of a filler in the finishing schedule is one more operation to be figured into the cost of finishing, so the selection of the wood to be used is the first deciding factor in reference to what to include in the finishing schedule.

Next is the color of the finished piece. If it is to be finished natural, without any stain or shading, the procedure is simple.

Minimum 2-Coat Finish; Sealer Plus Top Coat

Assuming that the article is in the low or moderate price field and that we are going to use close-grained lumber, we can adopt the following schedule:

1) Coat of sanding sealer; allow this time to dry.

2) Sand the surface smooth.

3) A top coat of lacquer. (This can be the final coat in any desired sheen, from high gloss to a rubbed-effect lacquer, or a mat finish without any gloss at all.)

This is a 2-coat finish. You could hardly use anything less and expect to get a reasonably practical and enduring finish worthy of the name.

Where a better finish is desirable and allowable, the addition of one more coat of lacquer will greatly improve the appearance of the finish, especially when the softer types of wood are used. The procedure then would be:

1) Sealer coat; let dry.
2) Sand surface smooth.
3) First coat of lacquer.
4) Second coat of lacquer.

Add Filler Coat for Open-Pore Woods

Where an open-grained wood is used and you want a natural finish, a filler is required to help fill the large open pores. An open-pore wood is seldom finished in a strictly natural finish (without stain) because of the difficulty of selecting enough lumber or veneer that is uniform in color and which is without mineral streaks and other off-color streaks or spots. Of course, if you are going to disregard cost, it can be done but the filler must also match the color of the wood being used. The schedule would be:

1) Filler (Prepare, apply, wipe, and let dry as per instructions from manufacturer.)
2) Apply sealer coat; dry.
3) Sand surface smooth.
4) First coat of lacquer.
5) Second coat (where needed).

To finish the same class of merchandise in a stained finish, the first thing would be to select the type of stain suitable for the object. This is where the final finished appearance of the product can be made beautiful or ruined entirely. I will not discuss water stains or acid stains; first, because these stains require considerable time to dry properly and because they usually have to be made up fresh for use at the time of finishing. Management and personnel in the majority of finishing departments do not have the time to wait for proper drying, or do not want to mix their own stains. Water and acid stains are permanent in color and practically non-fading.

MEMO from···

CLINCO

You're not in the army now!

Yes, it applies to manufacturers as well as to discharged service men. No longer on war work, your problems now involve civilian production. And, you need finishing materials *just right* for the change over.

FOR PEACE TIME PRODUCT FINISHING

USE Clinco

IMPROVED MATERIALS

Furniture Lacquers
Synthetic Enamels
Clear and Pigmented Metal Lacquers
Pigment and Nongrain Raising Stains
Casket Finishes

Write for Recommendations

THE CLINTON COMPANY

1210 Elston Avenue
Chicago 22, Illinois

Selection of Stain for Wood Finishing Job

The chief stains used in the production of wood furniture, fixtures, etc., today are of the: 1) non-grain-raising type, 2) pigment wiping stains, and 3) oil stains.

Non-grain-raising stain ranks first in light fastness. Pigment stain is second and oil stain is third. Non-grain-raising stain should be sprayed for best results. The quick drying of this stain is ideal for fast production schedules. Air pressures of around 30-lb. are best, both for good results and economy.

In using the stain as a toner or to uniform various types of woods to one shade, do not spray the stain too wet. First spray the lighter parts and then blend the different woods to produce one uniform tone. If a darker shade is needed, a wet coat can be sprayed over the entire piece.

Pigment stain is most successful when applied by dipping. It can be brushed or sprayed, but since this stain requires wiping, it is most economical when dipped, except in the case of extra large objects. To obtain best results, let the dipped piece air dry a few minutes before wiping. This gives those finely dispersed particles of pigment a chance to settle on the wood, and it aids in uniforming the different shades of wood in the piece. Most stains of this type require several hours of drying time before it is safe to apply a sealer coat; overnight drying is better still.

Regular oil stain is used but it is losing favor in the wood-finishing business because of its tendency to fade. Also, when sealed before the stain is thoroughly dry, the color is fugitive and will carry up into the sealer coat, leaving light streaks through the wood.

Some of the schedules most commonly used to finish a cabinet or piece of furniture made of walnut veneered sides and top, with any soft wood base or posts or corners, would be as follows:

1) Stain to uniform color.
2) Filler; wipe and dry.
3) Apply sealer coat; let dry.
4) Sand surface smooth.
5) First coat of lacquer.
6) Second coat of lacquer.

This is an economical setup and one that is often used.

When, Where and Why A Wash Coat is Used

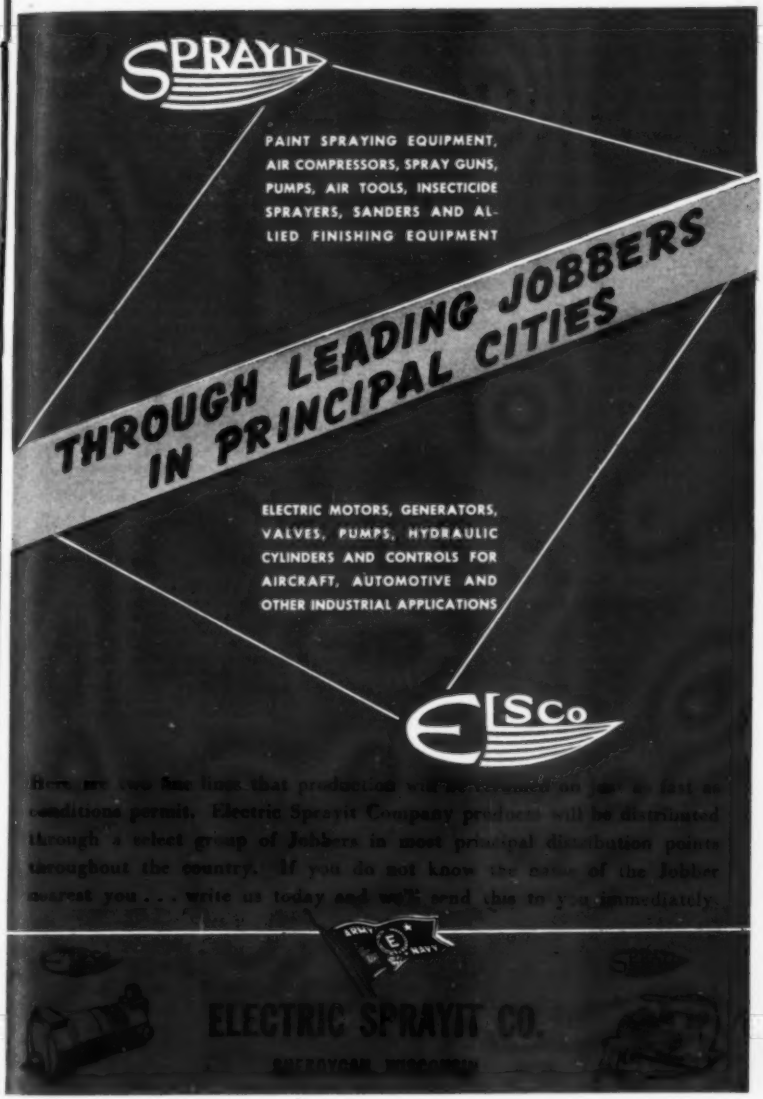
Where the sides of a cabinet or the legs or posts are made of soft wood, it is necessary to fill only the top. Then you can use a shading lacquer on these soft wood parts to match the filled top.

Where the wood shop sanding of the cabinet is not as good as it should have been, or if the pores of the wood are extra large and deep, a wash coat of either shellac or lacquer sealer is recommended before filling—this is to keep the beauty of the veneer at its best.

To prepare a wash coat of lacquer sealer, reduce the lacquer sealer by adding about two parts of thinner to one part of sealer. This schedule would be as follows:

1) Tone (stain).
2) Wash coat; dry.
3) Sand lightly.
4) Fill; let dry.
5) Seal; let dry.
6) Sand smooth.
7) First coat of lacquer.
8) Second coat of lacquer.

This produces an excellent finish which is really clear. The filled pores stand out against the lighter solid wood for a beautiful effect; or in the case of a lighter filled pore, as in limed oak, it looks attractive too. *(Cont. on page 88).*


SPRAYIT
PAINT SPRAYING EQUIPMENT, AIR COMPRESSORS, SPRAY GUNS, PUMPS, AIR TOOLS, INSECTICIDE SPRAYERS, SANDERS AND ALLIED FINISHING EQUIPMENT
THROUGH LEADING JOBBERS IN PRINCIPAL CITIES
ELECTRIC MOTORS, GENERATORS, VALVES, PUMPS, HYDRAULIC CYLINDERS AND CONTROLS FOR AIRCRAFT, AUTOMOTIVE AND OTHER INDUSTRIAL APPLICATIONS
ELSCO
ELECTRIC SPRAYIT CO.

Wash-coating before filling is standard practice on all of the finer quality furniture. It serves the purpose of stiffening the protruding wood "whiskers" and all-surface fibers so that a light sanding will make the wood smooth; it also retards the penetration of color into the solid wood, without preventing the proper filling of the open pores.

Some finishers follow the practice of tinting the wash coat with stain. This helps some to uniform the color and it also gives an undertone effect. Care must be used here, though, to avoid darkening the wash coat so much that it might become a shading stain and spoil an otherwise beautiful finish. About 2-oz. of concentrated NGR primary color to five gallons of wash coat will not make the material too dark.

(To be continued)

Arco to Have New 2-Story Research Laboratory

Plans for the immediate construction of a new 2-story research laboratory for the development of improved paints, lacquers, varnishes and new industrial coatings are announced by The Arco Co., Cleveland paint manufacturers. The laboratory, which is scheduled for completion early in 1946, will be of structural steel and brick construction and will be located adjacent to the company's general offices at 7301 Bessemer Ave., Cleveland, Ohio.

The upper floor will be given over entirely to product development work, and the ground floor to an evaluation and testing laboratory, resin research and a pilot plant for experimental production of new synthetic resins. Complete facilities for the accelerated testing of new and experimental finishes will be provided in controlled temperature rooms.

Transfer of research activities to the new building will provide an opportunity for increased service to customers in the existing laboratory, which will be devoted solely to production control and service.

"The accelerated pace of research and product development work during the war period has paved the way for many new and revolutionary coatings," Dr. Eugene W. Kanning, Arco research director, pointed out. "In giving the green light to this project, the War Production Board has recognized the necessity for prompt development of production finishes which will enhance the durability and value of household appliances, automobiles and hundreds of other items for which there is a tremendous pent-up demand."

Cylindrical Fiber Containers

Cylindrical containers, ranging in size from a small waste basket up to 20x36-in., the latter fitted with casters, are listed and illustrated in a folder mailed from Fibrcan Corp., Whitestone (near Whitestone Bridge), Long Island, N. Y. The containers are made of casehardened fibre with steel rim on top and steel spun bottom, double seamed and riveted. Colors are dark brown and olive green.

Arco's new research laboratories where an enlarged staff will be employed.

Hand Your FINISHING PROBLEMS to Us!

Rely on Reliance

Celebrate Victory by buying VICTORY BONDS!

We're ready now to custom-build the finishes for your new peace time products—finishes to fit your specific needs, that wear better, look better and are more economical. Reliance laboratories, resourcefulness and experience are at your disposal without obligation. May we consult with you on your requirements?

Letters from Readers

Film Thickness Gauge

On page 122 of July 1945 issue of INDUSTRIAL FINISHING, reference is made to a thickness gauge for use in measuring paint. You also refer to a spectrophotometer.—B. MFG. CO.

We observed, in the editorial on page 122 of July 1945 issue of INDUSTRIAL FINISHING, reference to a recently developed film thickness gauge. Would like to know more about this instrument. Can you supply us with the name of the manufacturer of this particular instrument?

Manufacturers of the gauge for use in measuring film thickness include the following, we believe:

Electronic Control Corp., 2669 E. Grand Blvd., Detroit, Mich.

American Instrument Co., 8015 Georgia Ave., Silver Springs, Md.

The spectrophotometer is a product of the General Electric Co., Schenectady, N. Y.—ED.

Custom Tumble Finishing

We have been informed that in Chicago there is a concern that will paint small wood wheels and turnings by the tumbling process. If you know of any concerns that do either tumbling or painting of small pieces by any other method we would like their names and addresses.—T. T. CO.

Vehicle for Metallic Powders

In the June 1945 issue, under Letters from Readers, I noticed a request from the J.C.Co. who is interested in procuring a vehicle for carrying metallic powders to be sprayed on cellulose acetate images. I would like to hear from the J.C.Co. pertaining to their problem. It is possible that we may have a solution.—Aridye Corp.

Electrostatic Detearing

I remember an article that appeared a few months ago about detearing of a dipped finishing material while the parts moved along on a conveyor. It was done by arranging a high-frequency electrical field in the path of the parts being conveyed. The article described the method as used for finishing on metal parts. Could this process be used successfully on dipped enamel on wood parts? Also, who makes the equipment for this work? —W.H.

The manufacturer of this equipment is Harper J. Ransburg Co., Indianapolis, Ind. As to whether or not this system can be used for removing "tears" from dip-coated wood parts, we are not sure. We suggest that you take up this proposition with the Ransburg Co.—ED.

Trettin's Article Clicked

We have written Mr. E. H. Trettin of the R. N. Nason Co. with reference to his article published in July issue INDUSTRIAL FINISHING. We do not have the address of this company and would appreciate your forwarding this letter to him.—H. FURN. CO.

Your letter has been forwarded to Mr. Trettin in Los Angeles, Calif.—ED.

One-Coat Enamel

We would appreciate the names of companies who can make an air drying enamel to cover soft wood in one coat, and over which we can brush ordinary lacquer without lifting the enamel.—B.B.Co.

Roller Coating Machines

Will you please give us a list of manufacturers of roller coating equipment? We are attempting to find a machine for the application of drawing oil to sheet metal prior to its fabrication in dies. We thought that a modification of a standard paint roller coater would do the job.—S. MFG. CO.

Information given.—ED.

Fillers Wanted

In your issue of June 1945, you have an article on thinning paste wood fillers. Would you be kind enough to send us the names of several local (Brooklyn, N. Y.) manufacturers who sell paste wood fillers, and who can

USERS TELL US WE'VE DEVELOPED A

Better Finish for Washer Bases

CHARACTERISTICS:

High resistance to soap, alkali and moisture . . . perfect matching of color with porcelain enamel tubs . . . complete color stability . . . long wearing qualities (is chip-proof and practically immune to scratches) . . . maximum protection against rust, due to excellent bonding properties.

APPLICATION:

Only one coat is needed. Finish is sprayed on.

BAKING TIME:

20 minutes at 300° F. . . . 7 minutes with infrared.
(Optional schedules are available.)

Vedoc

All *Vedoc* finishes are developed for a specific use, then slightly varied to best fit into each customer's production setup. For more information about these "better finishes", write . . .

LIQUID PLASTICS DIVISION
FERRO ENAMEL CORPORATION
CLEVELAND 5, OHIO

give us the proper data for use of same on plywood? We are particularly interested in knowing whether this filler can be used for voids in the cores of plywood. — A. CHAIR & NOVELTY CO.

In a letter we are giving you names of concerns in your territory who, we believe, can supply paste wood fillers.

Reading the last paragraph of your letter, wherein you ask about filling "voids in the cores of plywood", paste wood fillers are not made for this purpose, that is, they are not made to fill holes and cracks. They are only made to fill the tiny pores in the wood. If you want a crack filler, we are giving you the name of a concern that supplies such a material.—ED.

Conveyor Dipping Systems

Will you kindly give us the names of several manufacturers of conveyor dipping systems? If any of these manufacturers have Philadelphia representatives, please advise names and addresses.—S.T.Co. (Plumbers' Woodwork).

Information furnished.—ED.

Dipping; Spraying

Will you please advise us the names of manufacturers of small conveyor dipping systems, and small water-wash spray paint booths?—J.B.Co.

Information supplied.—ED.

Stencil "Veneerite" Process

Will you kindly send us the address of the firm selling stencils with wood patterns, as referred to on page 96 of July issue—the one called Stencil "Veneerite" Process.—J.S.

Will you please send name and address of manufacturer of "Veneerite", as per your article in July issue of your magazine?—I.G.

Juvenile Furniture; Toys

I have a little problem which, I trust, your research division may be able to help me with. I am interested in an organization setting up a nursery and toy department. In this connection we are interested in painting metal and wood furniture and toys with a non-toxic paint.

We would like to know just what should be specified and where the materials might be secured. One problem is to get the paint to adhere well to metal (wire) as well as wood. Another part of the problem is the question of which colors may be safely used in tinting the paint.—S.J.L.

Names of concerns who furnish this type of paint are being sent to you in a letter. Also, the names of concerns that supply a pre-treatment material for bright metal, so that paint will adhere to it.—ED.

Reprints of Articles Free

The following reprints of articles previously published in INDUSTRIAL FINISHING contain valuable, timely and original information:

"A Film is Born" (or "What Makes Paint Dry"), by Paul O. Blackmore.

"Bake Finishing Setup for New Motor Parts", by A. G. Trivison.

"Finishing Aluminum With Paint Coatings", by R. I. Wray.

"Tumble Finishing", by R. J. Fairburn.

Copies will be sent free on request—as long as they last.—ED.

Convection vs Radiant Heat

About six or eight months ago you published an article in INDUSTRIAL FINISHING, discussing the relative merits of infra-red baking against convection-type gas-fired ovens. As I recall, the article was written by Mr. Fairburn. I would appreciate it if you would furnish me with a reprint of this article.—L.C.S. (Typewriters).

The article appeared in March 1945 issue and was written by R. J. Fairburn. Copy of same is being sent to you.—ED.

Where to Buy "Trick Finishes"

Referring to the article entitled, "Trick Finishes", by S. P. Wilson, in the July issue of this magazine, we would appreciate obtaining a list of the manufacturers of the various materials mentioned, so that we may write them direct in order to obtain samples.—W.E.Co.

For Coating Flat Sheets

Have you any knowledge of equipment designed to apply lacquer or varnish to flat woodwork through the use of means other than by spraying with a hand-type gun?

We have been applying these finishes by spraying out of 5-gallon and 50-gallon containers for some time, but understand that there is on the mar-

An Expression of Appreciation

THE MEMBERS of United's active business family wish to express their appreciation to all the manufacturers and individuals who helped us to maintain our war material production.

We also wish to thank the many manufacturers and their staffs, whom we were privileged to serve and supply with war specification materials, for their co-operation, patience and helpfulness during the trying days when our capacity was stretched to the limit.

American courage, skill, resourcefulness and industry brought victory to our fighting men. During the months and years ahead every one must work and fight equally hard to win the peace and to build a sound workable peace economy

LACQUERS—THINNERS
METALLIZED FINISHES
SYNTHETICS AND
SPECIAL COATINGS
FOR ALL SURFACES

United Lacquer Mfg. Cor

General Offices, Laboratory, Factory: LINDEN, N. J.

NEW ENGLAND MFG. DIVISION, EVERETT, MASS.

ket other equipment, such as roller equipment and other devices that will coat flat surfaces much faster than spraying by the hand method. If you have any knowledge of such devices, we will be very happy to hear from you.—R.E. Co. (Store Equipment).

Yes, there are power feed roller-coating machines suitable for your work—and we are sending you names and addresses of some leading manufacturers in this line.

Also, there are automatic spraying machines wherein mounted spray guns are moved back and forth crosswise above a flat-bed conveyor which carries the flat sheets to be coated. After the work moves past the spray guns it continues on through a drying tunnel.

Both types of coating machines have been illustrated in connection with editorial articles and advertisements published in previous issues of this magazine.—ED.

Slat Painting Machines

We have had several inquiries for manufacturers of Venetian slat painting machines (roller coating type.) Have you a record of a manufacturer who is making them at the present time? We checked your magazine and did not find anything mentioned.—R.H.D.

Information supplied.—ED.

Sander; Burner; Striper

May I be thankful to you for information as to where I can buy a good electric sander? I have been using one made here in Chicago, but it is not very efficient.

Also, I need one electric burner, and one striper for fine work on automobiles.—V.H.

Filters for Spray Booths

Will you please give us the name of the company manufacturing filters for installation in spraying booths referred to on page 12 of July 1945 issue?—J.S. Co.

In your July issue I read with keen interest where the I. Heater Co. procured from you the name of a filter company who provides filters for spray booths. The filters are supposed to catch and retain particles of waste paint from overspray.

If you have these names available will you please let us know, as we would like to contact them and possibly arrange for filters for our stain and sealer booths, and also our lacquer booths. If you think these are workable in an oil stain and sealer and lacquer, I would appreciate knowing it, as we do have need for something like this.—B. FURN. Co.

One such concern is American Air Filter Co., 413 Central Ave., Louisville 8, Ky.—ED.

Galvanized Metal

Could you refer us to a manufacturer of some compound that can be applied to make paint to stick to galvanized metal? A common treatment is a vinegar wash, but this is not satisfactory, and we wonder if anyone manufactures a practical product for this purpose.—B.V.Co.

Yes, materials especially for this purpose are made by a number of concerns. We are submitting names and addresses in a letter.—ED.

Metal Filler Wanted

Our company is looking for a metal filler that can be used on sheet steel cabinets to successfully hide spot weld marks. We would like something that is easy to apply and which stays permanently in place. When the cabinets are covered with DuPont white enamel, or similar synthetic enamel, this filler should make the marks invisible to the eye. Please let us know the names of the leading manufacturers of this type of filling material.—P. Mfg. Co. (Quality Steel Cabinets).

Tumbling Barrels Wanted

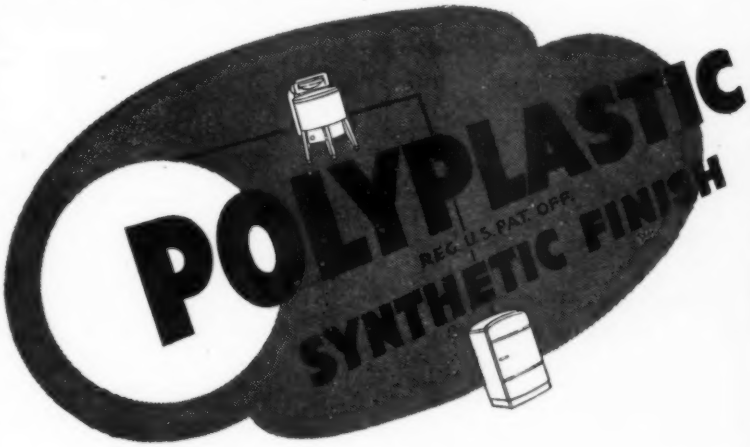
Would you kindly supply us with the names of manufacturers who make a paint tumbling barrel outfit suitable for painting small wood handles? The maximum diameter of our handles is 1¼-in., approximately 4¾-in. long.

We are eager to obtain information pertaining to a quick and economical way of painting these handles other than by dipping or spray painting. Any information you can supply us will be greatly appreciated.—U.F.Co.

Kindly forward a reprint of the "Tumbling Finishing" article mentioned in Letters from Readers, in the November 1944 issue of INDUSTRIAL FINISHING Magazine. Also, names and addresses of manufacturers of rubbing machines.—G. Co.

We would appreciate receiving a copy of the pamphlet entitled, "Tumble Finishing", by R. J. Fairburn, as reprinted from the September and October 1941 issues of your publication.—R.I., INC.

What You Have Been Waiting For —



Available Now!

Not a substitute—not an imitation—not an emergency stop-gap —POLYPLASTIC is a war finish now released for the products consumers are longing for — washing machines, mixers, vacuum cleaners, refrigerators, office appliances and other products that require a super finish.

POLYPLASTIC Synthetic Finish not only gives lasting protection with brilliant beauty — it gives it F-A-S-T. Also obtainable as a unique **monobake** finish— primer and finishing coat baked in one operation — cuts oven time in half.

POLYPLASTIC is not temperamental in the oven, slight temperature variations make no difference in color and lustre.

In white and standard colors.

Your inquiry is invited.

STANDARD VARNISH WORKS

2600 RICHMOND TERRACE
STATEN ISLAND, N. Y.

2600 FEDERAL STREET
CHICAGO, ILLINOIS

SINCE 1870

Engineers of Product Finishes

Questions and Answers

Wrinkle Finish Doesn't Need Foul Oven

In the August issue of INDUSTRIAL FINISHING, on page 82, there is a question "Why White Synthetic Finish Wrinkles?". The answer by A.B.C. is erroneous in stating that, "The real wrinkle finish is helped along by having a purposely fouled oven." This answer would apply to the crystal finish of years gone by, but there is a definitely recognized difference between *crystal* and *wrinkle*.

Wrinkle finish can be baked in any type oven, in pure or foul air, and similar textures will be produced under either condition. — NEW WRINKLE, INC.

Masks for Decorative Sandblasting

Answering a request from C. F. Co., whose inquiry on the above subject appeared on page 4 of August 1945 issue, the rubber mask alone is no good for sandblasting. You must have a steel or iron plate made the shape of the mask to hold it tight to the surface that is to be sandblasted. A metal plate 1/16-in. thick is enough for light air pressure, say 20-lbs., but as you increase the air pressure you will have to increase the thickness of the plate. This metal plate is used to give sharp lines, and it prevents the mask from blowing up around the edges, which would cause the lines to be ragged.

The rubber mask might be fixed with some kind of adhesive, so it would stick to the article being sandblasted, but after using it two or three times the fine particles of sand would stick to the adhesive and the mask would no longer be usable, so the best method is to back it up with a metal plate.

Here are a few suggestions: If the air pressure to be used is around 20-lbs. I suggest that you try using regular masking tape. For less than 20-lbs. of air pressure, use one layer of tape, and the more air pressure, the more layers of tape. If it is straight lines, the masking tape will be just the thing for it.

If the design is a fancy one, make a pattern of it in sheet metal first. Tape your surface to be sandblasted and lay the sheet metal pattern over it. Then cut around the pattern with a razor blade and carefully remove all masking tape from areas to be sandblasted. If you want to cut your mask first, tape a sheet of glass, apply sheet metal pattern, and cut the mask along the edges of the pattern. Then carefully remove the cut tape from the glass and apply the cut-out masking tape to the surface to be sandblasted. If you want to use the same mask more than once, be sure to blow off all sand dust before removing it from the surface that has been sandblasted, as this dust would prevent it from adhering to the next article to be sandblasted.

If you think rubber is the best,

Our Thanks to the Trade!

● Now that the thrill of Victory has quieted down, we are faced with the task of reconversion to civilian needs. Looking back, we feel that we owe a vote of thanks to our customers for the fine attitude they have shown in co-operating with us under the heavy handicaps imposed by war work.

● At the moment, our delivery schedules are gradually returning to normal and you can be certain that we are working just as hard to swing back into our regular stride as we ever did for war work. Our advanced technical experience and increased laboratory facilities will enable us to give you quality and quantity in any requirement. Our unequalled record for courtesy and service assures you of prompt deliveries on every order.

● In the meantime we again thank you for your understanding of the strenuous conditions under which we have been working. It is indeed our pleasure to offer you once again the facilities and knowledge of our plant and staff . . . knowing that we are not "just as good" but BETTER THAN EVER.

BECKWITH-CHANDLER CO.

DELANCEY & RUTHERFORD STS. **NEWARK, N. J.**

BETTER B BECKWITH-CHANDLER C **COATINGS**

get some sheet rubber 1/16-in. thick and make your own mask, but don't forget the metal plate to use with it.

There are times when I have to put a ½-in. hole through a piece of ¼-in. thick plate glass. The way we do it is with a piece of 1/16 sheet rubber and a metal washer with a ½-in. hole in it, clamped to the glass. In a couple of minutes the hole is through the glass. —A. MEDEL.

Cleaning and Coloring Small Castings

We are interested in methods of cleaning and securing a uniform copper-like finish on small bronze castings. Our interest is twofold and might be divided as follows: First, a tumbling or some method of giving a degree of smoothness and uniformity to rough or finished castings. Second, in producing a uniform color by dipping or some similar method.

The castings in question will vary somewhat in composition, but will run approximately 86% copper, the balance divided between tin, zinc and lead. We will also be interested in similar equipment for aluminum bronze, consisting of an alloy of approximately 88% copper, 2% iron and 10% aluminum.

We would appreciate your furnishing us with all available information concerning cleaning methods which will produce results as outlined above.—R. I. L.

The answer to your problem is simple—provided the cost or the necessary equipment cost is not to be considered. The steps would be: Receive castings well blasted (that is completely clean of sand and dirt); machine; remove grease by alkali cleaning or vapor degreasing; bright dip; rinse; copper flash in cyanide bath to .00005-in. thickness (masking bearing surfaces); rinse, dry; lacquer with clear lacquer, again masking bearing surfaces.

This would give your products a lasting rose-coppered finish. This method is easy to handle in any large plant that has all of these facilities in operation. Of course your requirements may not merit purchase of such equipment, if you do not now have it. However, this would be the answer to making the aluminum bronze and 85-5-5-5 bronze castings look the same, which would be impossible by other methods, as the color of the two alloys mentioned is quite different.

The cheapest method would be to treat the castings as follows: If they are not clean when received, sandblast them; machine; remove grease; rinse; bright dip; rinse in cold water; then in hot water; let dry and use. The bright dip is mixed as follows: To two gallons of concentrated sulphuric acid (com.) add one gallon of concentrated nitric acid, to which has been added one pint of water (cautiously) and one ounce of blue vitriol in a stone crock which is surrounded by running cold water to keep it cool. In process work this solution would have to be six to eight times as large as the one given. Its action is very fast.

The operator should have his castings racked on taped plating racks or bakelite racks, and the parts should be dipped and pulled above the solution after each dip to observe the degree of brightening. It must be remembered that by this method of brightening some metal is removed, therefore parts should never be suspended and left in this solution. However, the amount of metal removed in one

Pardon Our Pointing

Aircraft Finishes

Synthetic Adhesives

Zinc Chromate and Other Finishes

Strip Coating for Masking

Wrinkles

Surfacers

Water Dip Lacquers

Finishes for Metals and Plastics

We take pardonable pride in the fact that all during the war years, we did a good job of supplying finishes for customers who came to us admittedly puzzled. That same specialized interest is still our chief stock in trade. But now we have the extra advantage of materials formerly withheld for war reasons. Try us on a tough assignment and judge our ability to come through in a pinch.

Duralac Chemical Corporation

Lister Avenue **Newark 5, N. J.**

dip or two is minute. This method is used daily on parts held to tolerances of plus or minus .0002-in. The operator must take great care to avoid splashing this solution. It is very corrosive but will not burn if it is immediately rinsed or flushed off with ammonia or clean water.

Metal parts will not brighten unless they are uniformly clean. When metal content has depleted the potency of this solution, additions of nitric and sulphuric acids will bring it back to efficiency. If natural tarnish of the bronze is to be avoided the castings should be immediately coated with clear lacquer and dried.

If a smoother finish is necessary than the sandblasted one, the bright dipping should be preceded by a rolling or tumbling operation. My own experience on bronze castings shows that a rolling in a barrel at 30-r.p.m., using a thick mixture of water and pumice to which is added wood blocks, and rolling from seven to eight hours gives a good bright finish. I have also followed this with steel ball burnishing to give a smoother finish.

To the pumice and water solution, small additions of cyanide or cream of tartar will improve color results on copper alloys. Almost any representative of a tumbling barrel house can set up the right process for these castings, and will do so upon request, with regard to tumbling and burnishing.—C. W. MCNEIL, *Metallurigist-Chemist.*

Why Not Color Those Drill Bits Black?

On page 104, INDUSTRIAL FINISHING for July, is presented a question by S. S. Co. on "Painting and Labeling Shanks of Drill Bits." The comments and suggestions of three finishing engineers and consultants accompanying that article would seem to pose numerous problems militating against a desirable practical production procedure, such as S. S. Co. hoped to acquire.

Assuming that the difficulties related are real, it should be tentatively worthwhile to circumvent the original painting idea and instead to consider something entirely different. The undersigned offering this departure is himself an industrial coating manufacturer, and knows full well that all applied paint coatings and similar materials are not long durable on portable and hand tools or equipment—particularly on cutting-type tools; therefore the following recommendations are intended specifically in behalf of S. S. Co., with no benefit whatever to ourselves or other paint manufacturers.

The finish proposed here is a patented process for applying—by penetrating chemical action — an attractive and durable black finish on all products made of steel. The satin-like black finish actually has eye-appeal—impelling a desire to pick up the article and feel it. I would say that it possesses a strong sales asset; and besides its attractiveness, you should also realize the amazing simplicity of the process—the absence of elaborate and expensive equipment, and the great variety of work that can be treated at comparatively low cost. It is altogether different from the phosphate coating treatments for metal referred to on pages 110, 112, 114 of this same issue of INDUSTRIAL FINISHING. One difference of vital importance is that the proposed chemical finish produces no build-up on the surface, therefore it is ideally adapted for steel drills

HILO

Vitra Carlite

FRANZITE

Rip-pls (pre-war type)

#916 Black Crystal

Sheet Metal Coatings

—and Ready Now to Serve You

These and many other tried and approved pre-war Hilo Protective Coatings are now ready for you.

Just as fast as the raw material suppliers deliver the base products, we will resume making all of your coatings and have them on hand for prompt delivery.

Send your orders now.

HILO **HILO VARNISH CORPORATION**

42-60 Stewart Avenue, Brooklyn 6, N. Y.

2420 Washburne Ave., Chicago 8, Ill. • Park Sq. Bldg., Boston 16, Mass.

and reamers, gauges, and other dimensional tools.

Although this is a patented process, prospective users may obtain a license to use it. INDUSTRIAL FINISHING can furnish name and address. I have a copy of the Patent — No. 2,192,280, issued March 5, 1940, and from it shall present herein a brief digest of the salient features for the interest of those readers who like to know something about the composition and technique of plant processes.

The invention relates to a soluble bath composition to impart a color finish—by a process of oxidation—on steel and its alloys (except high chrome or stainless steel). It is applicable to steels, whether hard or soft, and is particularly recommended for finished tools and gauges to which it can be applied without altering the dimensions of same. Micro-photographs show actual penetration of from .00035 to .00045 of an inch. This surface will not chip or peel, crack, craze or rub off; and sheet steel may be formed or bent after treating. The bath comprises in aqueous solution a combination of a strong base and a readily oxidizing salt, preferably from different members of the alkali metal group—for instance, sodium hydroxide and potassium nitrate, proportioned two parts and one part respectively. For accuracy in preparation of the bath, the above apportioned mixture is now put up in convenient molded cakes.

In carrying out the process the composition thus obtained is dissolved in water in a heated tank; temperature of 285° F. is reached. The same procedure is followed in a second tank but, by adding more of the crystalline base, temperature of 310° F. is obtained. The articles to be treated (held in baskets or on suitable fixtures) are immersed into the low-temperature solution for the necessary length of time; then they are transferred directly into the second solution for the same length of time. The objects are then rinsed in water. In some cases they are dipped in a protective oil, and dried in sawdust or otherwise.

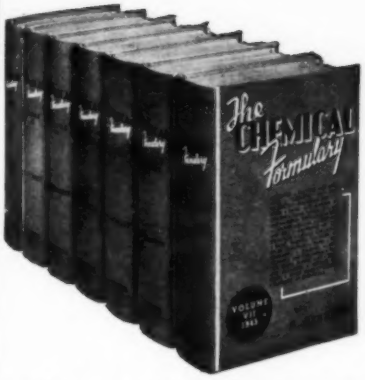
The chemical solutions do not deteriorate with continued use; they are non-poisonous, need no energizer, and do not throw off objectionable fumes.

Due to the fact that the bath, when kept boiling, does not exhaust or weaken in its oxidizing power during use, it is possible to obtain predictable and uniform results on the individual types of work by control of the boiling point temperatures. Once the most suitable boiling point temperature is determined for a particular kind of steel or article, such data should be recorded for repeat treatments. Suitable apparatus is available for automatically maintaining this control of both boiling point temperature and concentration at any point desired. The smooth close-textured finish makes a very pronounced improvement — akin to lubrication—in the operation of wood boring bits, saws, metal cutting tools, and other moving surfaces.

The company operates equipment daily for the purpose of demonstrating its treating or finishing processes, and also to process samples sent in for test finishing.

Tool sizes could be stamped into the shank or clutch end by steel die, say 8 for 8/32, 12 for 12/32, etc.—E. P. SCHAFER.

The probability of accidents happening increases with conditions of poor visibility.



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INDUSTRIAL FINISHING Magazine

1142 North Meridian Street **Indianapolis 4, Ind.**

Gadget for Filling a Striping Tool

Is there a small gadget on the market which can be used for filling the cylinder of a striping tool? We manufacture masonite tile patterned waliboard and use strippers for striping in different colors between the tiles. We get these colors in gallon cans and the tool we want is some kind of a pressure pump to fasten on top of the can, with a small tube outlet that can be placed in the cylinder of the striping tool so that paint can be pumped into the tube rather than poured into it.—R. MFG. Co.

I do not know of any small gadget for pumping liquid out of a can—not one that would handle heavy paint such as you need. You happen to be using our products and I appreciate what you are up against, that is filling the striper barrels with paint while they are in operation.

As a suggestion you might use an oil dispenser, with a hinged spout, such as used by the service station man when he puts oil in your car. Another suggestion is that you might solder a lever valve to the bottom side of a gallon can and dispense the paint as is done with a gravity feed paint bucket in spray painting. There is also the oil can that has a snout and a small air pump to force out the oil. The latter I am sure would not be very practical for the reason that paint must be agitated at intervals by stirring to keep the pigment in suspension. The cover of the oil can that has a pump is too small for filling or stirring. — BEUGLER MFG. Co.

While good visibility requires contrast, too much of it is trying on the eyes.

American-Marietta Buys Two Companies in Seattle

Purchase of the Schorn Paint Mfg. Co. and Solastic Product Co. of Seattle, By the American-Marietta Co. extends its paint manufacturing facilities to the Pacific Coast, and makes the Chicago company an important factor in the Pacific northwest.

The Schorn Co. was founded in 1928 and has wide distribution of its consumer paint products through dealers and jobbers. The 13-year old Solastic organization manufactures industrial and marine finishes.

Lester B. Schorn, president, and Robert L. Shearer, secretary will continue in their present positions at Schorn as will Richard E. Van Horn, president of Solastic. I. H. Johnson, treasurer of American-Marietta will serve as treasurer of the two companies. No major changes in personnel or policy will be made.

American-Marietta, which acquired the Ottawa Paint Works, Ltd., Ottawa, Canada in May, and the Sewall Paint & Varnish Co. in Kansas City and Dallas 12 months before, will now operate ten modern manufacturing plants. Definite plans have been made to increase the production of all plants and construction is already underway in three of them.

Crawford to Direct Sales of Egyptian Lacquer Mfg. Co.

Mr. Hugh C. Crawford was recently appointed Director of Sales of The Egyptian Lacquer Mfg. Co., Rockefeller Center, manufacturers of specialized production finishes for industrial users. During the past three years

H. C. Crawford, Director of Sales for The Egyptian Lacquer Mfg. Co.

Mr. Crawford has headed the War Production Division of the company. The announcement was made by O. J. S. deBrun, President of The Egyptian Lacquer Mfg. Co.

It's Tough—tougher than the ordinary lacquers!

Yes, here's a tough piece of goods, a lacquer finish that will meet the most critical requirements of postwar production. A nation hardened to bulldozers, tanks, battleships, monster planes and subs, will accept nothing less than a product finish that endures the elements, and the hardships of constant usage. Schaefer's Mar Proof Lacquer is a finish that cannot be marred or scratched. Made in either clear gloss rubbing or satin finish, it produces a splendid transparent coating of full depth on maple, walnut, gum, mahogany and other cabinet woods. Economical; gives plenty of coverage; dries quickly. Our Mar Proof Lacquer Sealer is recommended with it for a first-coater.

Now get off to a good start on your postwar production. Use this tough mar proof lacquer, and obtain satisfaction right away. Working samples furnished without obligation. Write for them!

THE SCHAEFER VARNISH COMPANY, INC.
Louisville, Kentucky

thumb-nail it—try to scratch or mar it! cannot be marred or scratched.

Smoothing and Polishing With Felt Wheels

ONE REASON why felt is preferred for buffing and polishing, in many instances, is the ease with which it can be shaped to fit the surface to be finished. Another is the natural abrasive nature of the wool fiber of which it is composed; and a third is the ease with which it can be coated with abrasive grains. Possibly 85% of the felt wheels in use are "set up"; that is, felt wheels that have been coated with glue or some other adhesive and then rolled in an abrasive of selected fineness.

The quality of this product which renders it especially suitable for polishing and buffing is its elasticity. The polishing action is largely performed by the abrasive coating material, while the cushioning property of the wheel equalizes the pressure and so provides a uniform cutting action.

Buffing with Rouge, Tripoli or Other Fine Abrasive

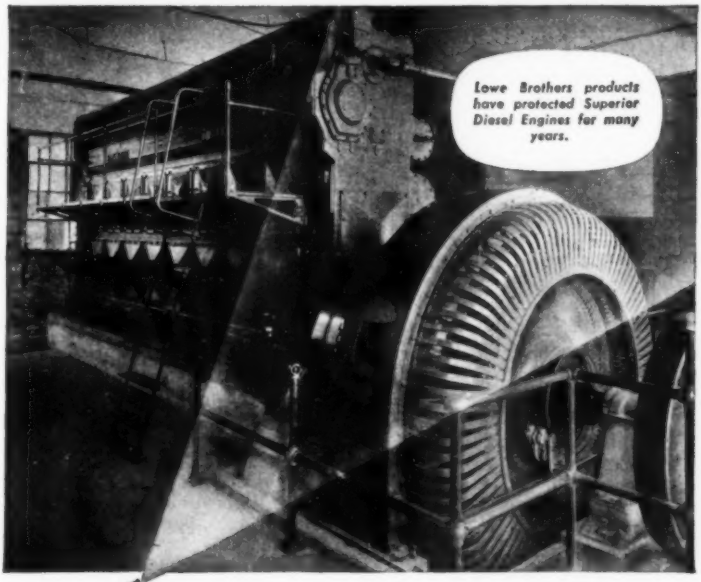
For the lighter polishing operation commonly known as buffing, the felt wheel is usually coated with a grease compound bearing rouge, tripoli or some other fine abrasive. For this purpose it is used without abrasive coating, but is charged or conditioned by merely pressing a stick of the compound against the revolving surface. The wheel is ready for use as soon as it has been lightly and evenly coated.

Buffing, as distinguished from polishing, contributes a shiny surface without very much reduction in superficial roughness. Therefore in many finishing operations buffing follows polishing, which actually smooths the surface and is often thought of as fine grinding.

Wide Range of Densities in Felt for Wheels

Felt polishing wheels are manufactured in at least four, and sometimes as many as nine different densities, depending on the particular operation to be served and especially the hardness and granular consistency of the metal to be surfaced; also the cushioning properties consequently required in the wheel. They are operated at speeds

Wool felt "bobs", shaped to suit the desired contour, are often used with flexible shaft drive to form concave surfaces.—The Felt Association, Inc.



Lowe Brothers Finishes Keep Pace With 25 Years of Power Progress

Many years ago Lowe Brothers technical staff developed an eminently successful finish for the oil field equipment manufactured by a company then known as the Superior Gas and Engine Company of Springfield, Ohio. This finish is still being used in the field for repaint jobs, and is ample proof of the sound development work back of the product.

With the advent of lacquer or pyroxylin materials many years ago, Lowe Brothers immediately developed and recommended a new pyroxylin finish.

This finish which is still being used was also established on a complete knowledge of finish requirements and exhaustive laboratory tests. The finish is easily applied, dries quickly, is easily sanded, and is smooth, attractive and easily cleaned. The finish successfully meets 120 hour tests for resistance to heat, salt water and oil.

Lowe Brothers experience is at your service in solving *your* problems.

Industrial Sales
THE LOWE BROTHERS CO.
Dayton, Ohio

KEEP ON BUYING WAR BONDS

Lowe Brothers
FINISHES for Industry

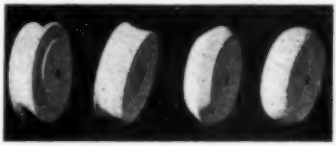
of 6500 to 8000 linear feet per minute which, in the small diameters, involves very high rotational speeds. For that reason they are carefully centered, trued and balanced.

Many felt wheels are manufactured individually in oversize discs from which the finished wheel is lathe-turned and ground to the finished size and contour. Others are cut from sheet felt, which is similar to wheel felt in composition but fabricated in yard-square sheets. Sheet felts are also the source of bobs which are small, oddly shaped grinding and polishing tools used, often with flexible-shaft equipment, for finishing irregular contours and especially recesses in metal objects.

Felt Wheels Formed to Fit Contour of Work

Generally speaking, these small shaped felt wheels are mounted on an arbor and clamped between adjustable flanges in the same manner as conventional grinding wheels of natural or synthetic mineral

Sanding the inside of a mirror frame with a shaped felt wheel covered with abrasive cloth.—Photo, Behr-Manning.



Felt polishing wheels are turned to various shapes according to the type of work to be performed by them.—Photo, The Felt Association, Inc.

composition. Very thin ones, however, are often manufactured with inbuilt metal flanges to impart lateral stiffness. Among the special types is one composed of radial segments of sheet felt assembled between metal locking rings.

Felt polishing wheels of every description have one thing in common. They are fabricated from wool and wool alone, or, as is commonly said in the trade, "nothing goes into them but wool and work". This means that the material is manufactured by extensive "fulling", which is a mechanical process of kneading wool under special conditions of low heat, pressure, moisture and lubrication. This process, which is peculiar to the manufacture of felt, produces a fine-grained fibrous structure of remarkable hardness and strength, without requiring chemical change in the wool fibers and without the use of binders of any sort to act as a stiffener.—*The Felt Association.*

Zapon to Double Capacity

Modernization and additions to plants and equipment, with a view to streamlining production of its regular peacetime products, will more than double the plant capacity of the Zapon Division of Atlas Powder Co. These new additions to plant and equipment are estimated to cost several hundred thousand dollars. Development and evaluation laboratories also are being enlarged and modernized. The company's plants at Stamford, Conn., and North Chicago, Ill., are affected by this program.

Seventy Years of Service to American Industry

DURING this historic year, which has seen American men and arms prevail in the great war for freedom and justice, we take this occasion to record our Seventieth milestone of progress and service to American industry.

These seventy years have witnessed an amazing development in the field of organic finishes and their greatly increased use on products of industry. The coating and finishing requirements of our war industries were well served by the manufacturers of organic coatings. Our company and staff are proud of its record in developing and supplying Army, Navy and Air Corps specification finishes during the war years.

The gigantic task of beating our swords into plowshares which we call "Reconversion" is now before us. It is a job that must be done with considerable speed and with the same energy and skill that was used to make the instruments of war.

LACQUERS
SEALERS
VARNISHES
STAINS
FILLERS
PRIMERS
ENAMELS
BLEACHES
SYNTHETICS

We list here some of the products in our regular line and offer manufacturers the services of our laboratory research staff for special formulations to meet their specific production requirements. Our long established policy of laboratory controlled production and of prompt service and deliveries will continue to be the keystone of our organization.

Manufacturers who are interested in modern fast drying production finishes are invited to submit their finishing production specifications and to request production test samples.

The Lawrence-McFadden Co.

Headquarters for Fine Finishes Since 1875

7430 STATE ROAD **PHILADELPHIA 36, PA.**

Materials Supplies Equipment

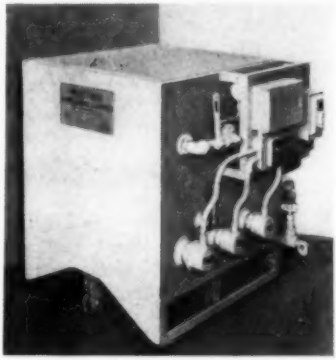
Improved Infra-Red Lamps

Nalco carbon-filament lamps are now supplied with a mechanical joint between the base and bulb, to provide a permanent seal under all circumstances. This method of mechanically locking the base to the bulb eliminates the need for cements or other binders, and assures maximum lamp life, even under the terrific heat of infra-red tunnel installations where cements tend to dry out and break down.

Nalco Dritherm infra-red ray lamps are of the carbon filament type which the manufacturer claims produce a higher percentage of infra-red rays in the desired Angstrom drying range. These lamps are products of the North American Electric Lamp Co., 1014 Tyler St., St. Louis 6, Mo.

New Portable Industrial Washing Machine

A new machine manufactured by the Industrial Washing Machine Corp., New Brunswick, N. J., is known as Model C.B.H. The unit consists of a tank and housing and is portable. Mounted on the housing are electric immersion heaters,



Designed to prevent detergents from making contact with operator's hands.

a pump and motor, valves, switches all wired, gauges, etc.

Parts to be cleaned are placed in a square mesh basket 16x16-in.; the cover is lowered and the spray valve turned. The force of the spray causes the basket to rotate so that all of the material is completely cleaned. If desired, the basket can be removed and the machine is thus converted into a dip tank which can be used for wax or oil dipping of parts.

For Flame-Resistant Coatings

Flame-resistant and weather-resistant awnings, clothing, tents, upholstery, drapes, carpets, paints, and linoleum for civilians are a step nearer reality now that Clorafin 42 and 70, Hercules Powder Co.'s chlorinated paraffin, has been taken off allocation for the first time.

Developed in the early years of World War II to fulfill an urgent wartime need for a quality flame-proofing material, the success of the Clorafin compounds in doing

Since others have been helped, doubtless,

We can be of real service to you, also!

THROUGH this most critical period in world history, we have developed protective and decorative coatings for surfaces of every description and we have numerous satisfied customers using these materials.

It is therefore, with extreme confidence in our ability to serve you satisfactorily, that we invite you to put your finishing problems up to us. In converting to civilian production, write us about . . .

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SPECIAL COATINGS
SURFACERS
SYNTHETICS

"Call on Walker"

H. V. WALKER CO.
Elizabeth, New Jersey
MODERN PRODUCTION FINISHES

three jobs at once — imparting flame, water, and weather-resistant qualities to fabrics—points the way to many civilian applications.

Also fabrics treated with the Clorafins are color fast, flexible, stable in water, resistant to high and low temperatures, and are free of objectionable odors. In addition, the Clorafins are economical to use.

Clorafin 42 is a viscous, nonflammable liquid plasticizer and is soluble in a wide range of solvents. It is compatible with a wide range of chemical and oil plasticizers, waxes, and resins and is used as the plasticizer for vinyl copolymers.

Clorafin 70 is an amber colored nonflammable solid resin with a comparatively high melting point. It is also widely compatible with plasticizers, waxes, other resins.

In addition to being used as a resin ingredient in compounds that possess flame, water, and mildew-resistant qualities, it can be used in flame-retardant paints and to formulate adhesives.

Clorafin 70 is a major ingredient in flame-resistant linoleum and is used to flameproof nonskid deck coverings and life preservers.

Cold Degreaser Serves as General Purpose Cleaner

According to a folder sent out by E. A. Gerlach Co., 23rd and Ontario Streets, Philadelphia 40, Penna., Gerlach "60 degreaser" is a general purpose chemical "cold" cleaner for degreasing and cleaning metals and for cleaning and washing painted surfaces.

The material is a concentrate. For degreasing metal parts, mix five gallons of kerosene or light fuel oil distillate, with one gallon of Gerlach "60 degreaser", thus providing six gallons of degreasing solution. Spray or brush the solution on the surfaces to be cleaned, allow it to soak in for 5 to 20 minutes, then pressure rinse with water—warm water if possible.

Gerlach "60 degreaser" has emulsifying properties so that kerosene, gasoline or oil mixed with Gerlach "60 degreaser" will, in turn, mix with water. A pressure water rinse, therefore, readily washes off all grease and oil which have been loosened from the surfaces being cleaned.

Gerlach "60 degreaser" is harmless to all metals, painted surfaces, hands and clothing. It is non-inflammable.

Spray Booths to Handle Metal Spray Dust

The Metallizing Engineering Co., Long Island City 1, N. Y., announces a complete line of spray booths and dust-collecting equipment designed expressly to handle metal spray dust.

Typical booth for metal spraying.

Dependability plus-

YARNALL
INDUSTRIAL FINISHES

have that PLUS factor because —in the making it's a "must" with Yarnall that provision be made for accomplishing *more* than minimum requirements. They never fail *because*, they have—"*Something to spare.*"

Ordinary spray booths, designed for paint and similar materials, do not solve all of the problems created by strong blasts of air and metal from metallizing guns. These difficulties are now overcome with metallizing spray booths and dust-collecting equipment which are designed, engineered and built for handling sprayed metal dust.

The line includes wet collectors and water-wash spray booths which gather metal particles in a sludge sump where valuable dust may be reclaimed for salvage.

Metco spray booths include such merits as sloping rear wall that eliminates eddies and recirculation; open type work table, down draft, dust trap and cleanout door.

"Lackeroff Soap"

The Potter Paint Co., Cortland, N. Y., announces "Lackeroff Soap" for removing lacquer, paint and synthetics from workers' hands. According to the company's circular "Lackeroff soap contains no harsh alkali, acids nor abrasives. Cleaning is done by dissolving and emulsifying foreign matter and washing it away completely with water. Economical to use—it takes only a little to get dirty hands really clean. Used after work—it eliminates need of protective hand creams. It is used like any liquid soap".

New Stamping Ink for Smooth Surfaces

The Louis Melind Co., 362 W. Chicago Ave., Chicago 10, Ill., has put on the market a new type of stamping ink called "Slink." It was developed especially for marking slick plastic surfaces, the kind requiring an ink that really sticks. "Slink" is also suitable for use on cellophane, waxed or glazed paper, metal and glass. Being heat and weather-resistant, it is ideal for marking many products. Its quick-drying qualities permit production-line marking without danger of smearing. It is available in black, white, blue, green, purple and red.

New Wrinkle Produces New Synthetic Resin Finish

New Wrinkle, Inc., of Dayton, Ohio, announces a research development which has been made available to its licensees—a new synthetic-resin-base wrinkle finish composition that needs no cooking. As a result, a marked economy in time of manufacture is effected.

The new material can be applied in any desired textures by spraying, spreading or rolling. The unusual flexibility of the resulting product makes it possible to apply such wrinkle finishes to paper, cloth, felt and other flexibile materials as well as to metal.

Treatment for Water-Curtain Paint Spray Booths

Harco Spra-Kleen, a product of Harco Chemical Co., 338 North Ave., E., Cranford, N. J., is a liquid alkaline concentrate of compounded chemicals readily soluble in hot or cold water. It is recommended as an all-purpose detergent and control in water-curtain type paint spray booths; prevents paint overspray from fouling booth sheets, nozzles, circulating lines and ventilating ducts. Its definite control of the objectionable foam makes it unique in this field.

This material is non-inflammable and labor saving. According to the manufacturer, it eliminates the

"Now that we're using S-I-P CLEEN-UP Polish, those table tops sure come in handy to Big Bertha!"

MIRROR SMOOTH!

THAT'S THE KIND OF POLISH YOU'LL GET WITH

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No fuss, no hard rubbing, no bother! Just "wipe it on and wipe it off." Save time and labor . . . increase the sales appeal of your product!

S-I-P CLEEN-UP Polish is made and guaranteed by the makers of the famous WEAR MASTER Finishes . . . and *you can try it without obligation.*

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Just clip this coupon to your letterhead and mail it to us for a generous free sample of S-I-P CLEEN-UP POLISH. No obligation.

EVANSVILLE 4, INDIANA

daily skimming of the foam and the usual manual effort required to remove sludge. Used economically, it assures long operating periods between shut-downs for cleaning. An occasional flushing to the drain is all that is required to return the equipment to immediate efficient operation.

An initial application of one gallon of Harco Spray-Kleen to each 100 gallons of water capacity will prove sufficient in many cases. To combat heavy spray the addition of one gallon of the compound to each 250 gallons of water, at 8-hour intervals, will maintain a completely clean, trouble-free system.

Stainproof Enamels for Household Appliances

A new group of all-synthetic, hi-bake enamels that give an exceptionally hard, stainproof finish designed to endure heavy household usage has been developed by The Arco Co., Cleveland, Ohio.

These finishes, called Synox, are already being produced in several whites which have been thoroughly tested and adopted by some of the country's largest household appliance manufacturers. One type is designed for refrigerators, deep freeze units, stoves, ironers and electric mixers, and another for dishwashers and washing machines.

These new enamels give some indication of the impact with postwar research based on the use of new copolymers, elastomers and other synthetic materials that were essential to the war effort will have on the improvement of all types of peacetime necessities.

Tests in the Arco evaluation laboratories and by industrial users have shown that these enamels have an unusual degree of water and alkali resistance, stain resistance and exceptional color retention. They resist normal fruit acids, vinegar, etc., and are not affected by dilute or concentrated alkaline solutions which frequently attack and discolor enamel coatings in common use.

The coating resists the action of hot soapy solutions without dulling or excessive softening or embrittlement and is said to have great abrasion resistance and low water retention.

Synox has been successfully applied to clean steel, with or without primer, to aluminum and to magnesium. When subjected to complete cycle testing on the Arco microknife and the Arco elongauge, it has shown excellent adhesion to bare steel and to aluminum sheet that had been slightly etched with a phosphoric acid type cleaner.

Despite its extreme hardness, Synox shows a flexibility which is more than ample to meet all service conditions.

Wide variations in the temperature and time cycle used in baking this enamel have produced no detectable difference in the color, film strength and abrasion resistance of the finish.

Acid-Resistant Paint for Maintenance

Designated as "Pen-Kote 500," a new general-purpose maintenance paint for use in plating plants and other high-humidity applications is announced by Peninsular Chemical Products Co., 6795 E. 9-Mile Road, Van Dyke (Detroit), Mich. This material is entirely different in composition from other maintenance paints.

Pen-Kote 500 is unusually high in solids content; one coat often gives complete protection and two coats are sufficient under the most

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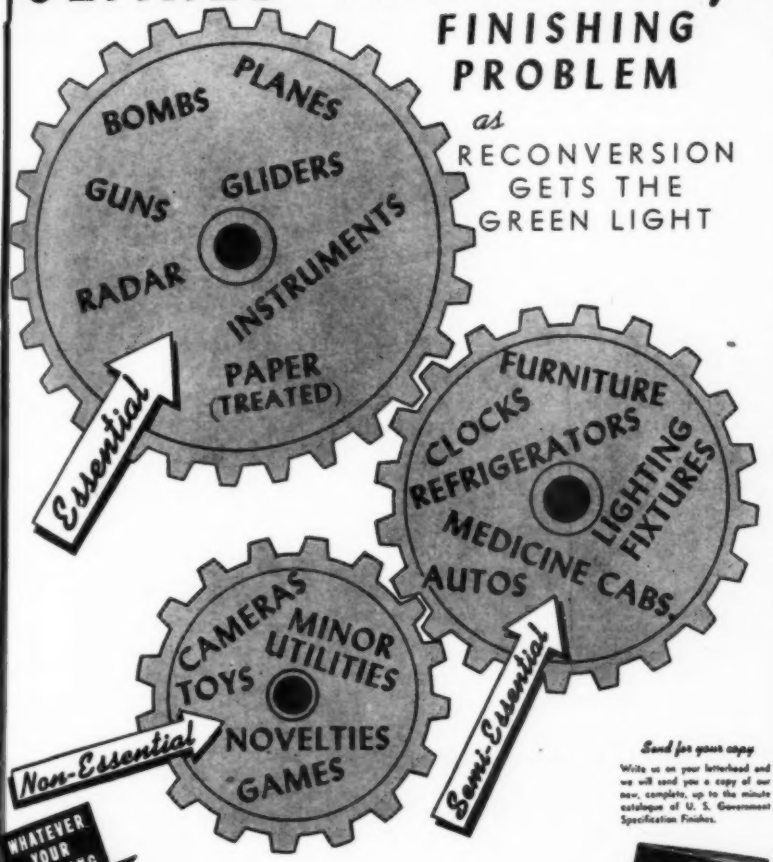
as RECONVERSION GETS THE GREEN LIGHT



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TO FIT YOUR REQUIREMENTS

ALAKA

LACQUER & CHEMICAL CORPORATION — 220 FORTIETH ST., BROOKLYN 32, N.Y.

difficult conditions. It can be applied by brush, dip or spray.

Surfaces to be protected need not be dry or extra-clean. On plating tanks, ductwork etc., for example, corroded surfaces can be roughly wire-brushed, rinsed with water and painted immediately with Pen-Kote 500. Brick, wood, metal, paint and all other surfaces—wet or dry — are covered with equal ease and effectiveness. Even when applied in the most humid atmosphere, this paint dries to a hard, semi-gloss finish in 30 minutes or less. Hot surfaces are painted as readily as cold.

Because of these features, and because this paint is odorless, Pen-Kote 500 can be quickly applied without discomfort to plant personnel and with no shut-downs or interruption to production.

This new paint is extremely resistant to both acids and alkalis, and is highly adhesive, flexible and durable. Surfaces can be recoated as often as desired without peeling or blistering. And previous coatings of asphalt or any other paint will not work through, for Pen-Kote 500 is an excellent non-bleeding sealer. Standard color is medium gray, and other colors are available on application.

Portable Electric Infra-Red Units

Cabonatic Corp., 117 W. 63rd St., New York 23, N. Y., announces the availability of two new portable infra-red units, for use with reflector type (R40 or RE40) infra-red or drying lamps. Model W6 is designed for six lamps, and model R12 for 12 lamps.

Reflector type lamps in any size (125-watt, 250-watt, 375-watt) may be used. The units are designed for maximum flexibility, and may be used for hundreds of applications where heat is desired in baking, drying, evaporating, preheating, etc. These portable units are made of heavy-gauge metal, rigidly constructed, with complete flexibility for adaptation at any angle or in any position desired.

Cleans Small Metal Parts

Electric-automatic washers for baskets full of small metal parts, are announced by Modern Maid Co., Inc., 122 S. Michigan Ave., Chicago 3, Ill. Included with the partitioned washing and rinsing tank there is an impeller pump powered with a ½-hp. motor. Washing solvent strikes metal parts with great force, thereby giving quick cleaning action. One man can operate three baskets of metal parts, washing, draining and rinsing each basket all at the same time.

Corrosion-Proof Coatings

Decontamination powders are both protective and destructive. While they protect people from the insects and diseases of fever-ridden jungles and pestilent-filled countries, they corrode the metal containers in which they are shipped and stored. As protection against this form of contamination, Vinylite-resin corrosion-resistant finishes are applied to the exterior and interior of an 8-gallon bleaching powder container and to the inner compartment of a 6-gallon 2-compartment decontamination powder container.

Possessing excellent chemical resistance, these coatings protect the containers from the corrosive action of chlorine, liberated freely by bleaching powder. Because Viny-

Research NOW— for Postwar SALES

The Guardsman Studio

. . . Bigger, better equipped, expertly staffed — THE GUARDSMAN STUDIO has completed exhaustive research on *furniture finishes* among recognized leading merchandisers, buyers, designers, and stylists . . . to determine what the "buying public" want and will be looking for in postwar furniture finishes. This research will be continuing . . . will make certain that at all times Guardsman furniture finishes will be progressively best for their required purposes.

Your Customers will be looking for

Guardsman Finish

an exclusive product of

Guardsman
A Beautiful Finish
Highly resistant to: boiling water, hot dishes, scratches, mars . . . alcoholic beverages.
GRAND RAPIDS VARNISH CORP.
GRAND RAPIDS, MICH.

GRAND RAPIDS VARNISH CORPORATION
GRAND RAPIDS, MICHIGAN

lite-resin coatings are tough, flexible, and resistant to impact, the surfaces of the containers are protected from moisture and chemicals by a continuous film that will not fracture on rough handling. In desert heat or arctic cold, Vinylite-resin finishes offer long-lasting protection for these decontamination powder containers, since they do not crack, blister, flake, chip or peel. Vinylite resin is a product of Bakelite Corp., 300 Madison Ave., New York 17, N. Y.

Portable Wash and Rinse Unit

A new single-stage washer, which permits rinsing and washing in one unit, is announced by Optimus Equipment Co., 209 Church St., Matawan, N. J., manufacturers of mechanical metal washing machines and dryers.

An additional feature is the fact that the unit is portable, permitting it to be easily spotted wherever the work is located.

The unit is small, compact, quick-working and handy, occupying a floor area of only 12-sq.ft. The unit comes complete with moving jets and easy-operating vertical sliding doors that adequately control splash and spray; can be equipped with any type heating device and thermostatic control.

Prevents Fog on Glass

A new anti-fog preparation for keeping goggle lenses and face shields clear is announced by the American Optical Co., Southbridge, Mass.

The new AO anti-fog material, made from a scientific formula to penetrate the ultramicroscopic pores of glass, deposits a thin film which helps prevent fogging, steaming, and frosting of all types of glass surfaces. In addition, it removes grease and dirt from glass, and allows perfect visibility.

The preparation is easily applied by simply spreading it on both surfaces of glass, rubbing the surfaces thoroughly, and then polishing them with a soft cloth or paper. The anti-fog preparation is obtainable in a 1-oz. jar or a 1-lb. jar.

"Everstick" Name Plates of Plastic

The Pennsylvania Plastics Corp., 5025 Liberty Ave., Pittsburgh, Penna., developed a gummed plastic plate that will adhere and make a permanent bond to any clean surface when moistened with suitable solvent such as benzine, naphtha, etc. An identification plate can now be permanently attached to any clean surface without using screws and other usual methods of attaching plates.

Everclear "Everstick" Plastic Plates are the result of years of research to develop a cement that could be applied to the back of plastic plates and dried to facilitate easy handling. When the plate is ready to be applied it is reactivated with a common solvent and forms a permanent bond with the surface (flat or curved) to which it is adhered. A new field has been opened to many who have been denied the colorful permanent brilliance of a plastic plate.

The O. A. Both Corporation, originators of Puritan Silver Pastes, 114 Pearl Street, Boston, Mass., is very pleased to announce that they are again in a position to make deliveries on most grades of Gold, Aluminum and Antique Bronze Powders. They are filling orders consecutively.—Advt.

THERE'LL BE REGRETS!
Junior's finish will be hard to take . . . he'll have his regrets! And, so will you, if potential customers think the finish of your product is hard to take. Why not be sure your merchandise is finished in a style that will stimulate sales by using the services of our creative studio?
Many a product has left our studio with a new, dress that has been helpful in reaching new sales peaks.

Write us about your finishing problems . . we have the ability to create, and the skill to produce, finishing materials of distinction.

No Tampering with Quality

ROCKFORD VARNISH *Company*
ROCKFORD, ILLINOIS

Manufacturers of Protective and Decorative Coatings

Booklets Catalogs Circulars

Dipping Baskets

A variety of shapes and sizes of wire mesh baskets suitable for dipping small parts into metal cleaning solutions, paint materials, etc., are illustrated in a bulletin released by The Udylite Corp., 1651 E. Grand Blvd., Detroit 11, Mich.

Infrared Drying Bulletin

A new 4-page bulletin that illustrates and describes various features of the "Evenray System" of infrared drying, as applied to paint coatings, is ready for distribution by Fostoria Pressed Steel Corp., Fostoria, Ohio.

Chemical Coloring of Metals

"Enthone Ebonol Coloring and Blackening Processes for Metals" is an 8-page illustrated booklet in color, describing coloring processes for copper and copper alloys and blackening processes for zinc and steel. Page size, 8½x11-in. For a free copy, write The Enthone Co., New Haven 2, Conn.

Electronics Book Free

The Electronic Corporation of America, 45 W. 18th St., New York 11, N. Y., announces the publication of a booklet, The Amazing Electron, for distribution to educators, and the general public. Profusely illustrated in cartoon technique, and simply written, the booklet is intended to bring within the grasp of everyone the basic facts about electronics.

According to Samuel J. Novick, president of ECA, "We are entering an electronic age, and every industry, indeed our whole economic and social life will be changed for the better. But unless the general public is kept aware of this expanding frontier of science and industry business will not reap the full benefits that are possible."

Free Book on Drying Ovens

The new 24-page catalog No. 131, just issued by J. O. Ross Engineering Corp., 350 Madison Ave., New York 17, N. Y., is unusually complete in the helpful information it provides. Many illustrations are shown on its 8½x11-in. pages.

It not only devotes a large section to the principles and processes of industrial drying, and describes methods employed in a variety of industries, but treats also such subjects as Infra-Red Drying; Sources of Heat and Heat Cost, Comparisons, Material Handling, Oven Construction and Heat Control.

Dust and Spray Hoods

A 4-page folder describes and illustrates several different types of respirator hoods for safeguarding workers. For a free copy, write Industrial Products Co., 2974 N. Fourth St., Philadelphia 33, Penna.

Complete File of I.F. Magazines

Jack Rudd of Arrow Lacquer Co., 789 Stone Ave., Brooklyn 12, N. Y., says he has a complete file of all issues of Industrial Finishing Magazine. He is willing to sell part or all of these copies.

Floor Repair Bulletin

If you are interested in repairing or covering worn concrete floors, send for the new bulletin that tells all about "Stonoleum", a self-bonding, "self-healing" flooring that doesn't dust, crack, pit or crumble. Write Continental Asbestos & Refining Corp., 1 Madison Ave., New York 10, N. Y.

How to Use Metalprep

A 4-page bulletin describes and illustrates how to use the wipe-off type of Metalprep for cleaning metal surfaces to be painted. "Metalprep effectively dissolves and removes greases and oils, as well as rust and

AD INTERIM *Availability*

• The Watson-Standard laboratories are ready to assist in supplying you with a protective coating formulated from available materials for your specific coating requirements.

A number of critical chemicals needed by our armed forces to continue the prosecution of the war will of necessity not be available for the production of top quality protective coatings, in the present and immediate post war period.

Your requests for detailed information will be given our immediate attention.

Rx PROTECTIVE COATINGS

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Factory and General Office:
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Manufacturers of
PAINTS • VARNISHES
INDUSTRIAL FINISHES
AND LITHOGRAPH COATINGS

rusting agents from the surface of the metal. Due to its penetrative solvents, Metalprep reaches the base of the rust and even though the rust is not entirely removed, further rusting action is stopped or inhibited."

Write to Neilson Chemical Co., 6564 Benson St., Detroit 7, Mich., and ask for Wipe-off Metalprep Bulletin 45-34.

Buffing Wheels and Compounds

A new 6-page folder, printed in two colors, lists and illustrates a variety of modern buffing wheels and buffing compounds used in connection with various phases of bright metal finishing. Write for a free copy to The Udylite Corp., Detroit 11, Mich., or to any of the company's district offices or distributors.

Bake-Oven Bulletin

A 4-page illustrated bulletin, published by Gehnrich Oven Divn. of W. S. Rockwell Co., 108 Jewel St., Brooklyn 22, N. Y., presents considerable illustrated information about the company's ovens. Many different diagrams show the circulation of air inside closed ovens. Information is given about heat supply systems, heat distribution methods and product-handling into and out of ovens.

Electronic Heating Book Is Free

A 16-page booklet, written for both engineer and manufacturer on the subject of electronic heating, contains the essential facts in a language stripped of confusing terminologies. It describes the chief methods and fields of application and lists many proved present day uses. Illustrations are used to make all the important parts of the text easily understood, and several types of high frequency generators are shown.

The author has been a pioneer in the electronic heating industry for more than 21 years. The booklet is available upon request by writing to Scientific Electric, 111 Monroe St., Garfield, N. J.

Porcelain Enamel Institute Announces Colorful Booklet

A colorful new booklet, describing many of the characteristics and applications for porcelain enamel, has been issued by the Porcelain Enamel Institute, Inc., 1010 Vermont Ave., N. W., Washington, D. C. It includes a pictorial description of how porcelain enamel is made and applied to metal parts.

Many of the ways in which porcelain enamel improves the appearance and service of household, commercial and industrial products are fully covered in the new booklet. It points out the attractive appearance, cleanliness and durability of porcelain enamel finishes in all these fields. The information given is of interest to engineers, designers and manufacturing and sales executives.

"Tenite II Melt Coating"

"Tenite II Melt Coating," a 2-page bulletin prepared for the coating and laminating industries, has been issued by Tennessee Eastman Corp., Kingsport, Tenn. This publication describes the coating and impregnating of paper and fabrics with Tenite II, Eastman cellulose acetate butyrate plastic. Coatings of this material are said to be waterproof, brilliant of surface, and flexible. The coating effects a high degree of translucence and improves the wet strength of paper, and enables sheets of paper or fabric to be laminated together.

Tenite II compositions for melt coating are supplied in the form of granules and in formulas which accentuate either flexibility and toughness or stiffness, as desired. They are obtainable in clear and colored transparents.

Coatings are applied from a hot mixture and harden at room temperature. Temperature and viscosities of a typical Tenite formulation for melt coating are listed, together with a summary of estimated approximate costs, based on a coating speed of 40-ft. per minute on paper 42-in. wide. Tennessee Eastman Corporation offers samples of Tenite II for laboratory coating trials.

Permanent Color-Fast Stains

The Chadeloid Corp., Dayton, Ohio, announces the publication of a new brochure, "Insure Your Profits with Chadeloid Stains," which explains Chadeloid's license system under the "Permanent Stain" patents for the staining of wood with aniline dyes. Forty-nine leading manufacturers in the industrial finishing industry have already taken licenses under these patents.

"Permanent Stains" are covered by a series of basic patents involving the use of aniline dyes, ethylene glycol ethers, alcohols, and a coal-tar distillate, which acts as a "baffle." These stains are also furnished combined with fillers so that combined staining

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NEW PERIOD
WOOD and METAL
FINISHES

SYNTHETICS
VARNISHES
SHELLAC
FILLERS
STAINS
SUPPLIES

LACQUERS and SEALERS

Our complete line of Lacquers and Sealers developed by our Laboratory over a period of many years is designed to meet the most exacting requirements of modern production schedules.

The New Period line of Lacquers and Sealers include rubbing and non-rubbing, gloss and semi-gloss, clear lacquers and also pigmented lacquers.

Send us your specifications and a production sample will be shipped immediately.

NEW PERIOD PRODUCTION FINISHES

NEW YORK WOODFINISHERS SUPPLY CO., INC.
109 IMLAY STREET BROOKLYN, N. Y.
Established 1917

and filling of wood can be effected simultaneously. Among the developments covered by these patents is the use of aniline dyes combined with high boiling point and low boiling point solvents and a cellulose derivative to control the penetration of the stain into the wood.

These stains are non-bleeding when covered with lacquer, the color is fast and permanent, and the grain of the wood is not raised. Chadeloid "Permanent Stains" are also used for coating plastics, paper, fabrics, leathers, furs, metals, glasses, and other materials, as well as wood.

Developing Job Standards for Selecting, Placing Personnel

An entirely new procedure in developing job standards for use in the selection and placement of personnel, the results of a research project begun in 1932, are announced by the National Institute of Vocational Research, Inc. of Los Angeles. This procedure, involving use of a new-type questionnaire called the Job Qualification Inventory, was developed under the direction of Keith Van Allyn, currently head of Personnel Research, Los Angeles Transit Lines, and formerly Senior Industrial Engineer, Douglas Aircraft Co., in cooperation with many personnel executives who are now carrying out extensive experiments with the new published Inventory.

The Inventory is unique in that it can be used, not only to select and place personnel, but also to establish practical job specifications by which employees' or applicants' qualifications may be appraised. This is accomplished by submitting the Inventory to all present employees in the particular job that is to be studied—these employees being identified as "superior", "average" or "poor" according to available company records of individual performance, merit rating, accidents, earnings, work spoilage, etc.

Complete information may be had by writing the National Institute of Vocational Research, Inc., Dept. "C", Los Angeles 13, Calif.

Scientific Use of Color Outlined in Series of Booklets

Scientific color use has been pioneered by the Paint Division of the Pittsburgh Plate Glass Co. through formulation of the Principles of Color Dynamics. These principles, representing findings of over a decade of intensive research, are based on the fact that color, as a member of the electromagnetic spectrum, has power and energy, i.e., each color has a definite, measurable wave-length. Exhaustive tests and hundreds of applications have proven that color affects or influences a person mentally and physically.

By proper choice and expert use of certain colors, these various reactions can be controlled and turned into productive channels. The exact methods by which industrialists, office managers or business men, or others in practically all walks of life can use color to help them is graphically told in a new series of booklets prepared by Pittsburgh Plate. Each booklet contains an intensive discussion of color application in the particular fields mentioned.

The books are titled: Color Dynamics in Industry; Color Dynamics for Hospitals and Institutions; Color Dynamics and the School; Color Dynamics for Offices, Hotels, Clubs and Restaurants; Color Dynamics for Automobile Sales and Service Depts.; and Color Dynamics for the Home. Copies of any booklet may be had by writing Color Engineering Dept., Pittsburgh Plate Glass Co., 632 Duquesne Way, Pittsburgh 22, Penna.

Grinding and Smoothing with Abrasive Belts

A new 8-page, 8½x11-in. booklet by Behr-Manning, Troy, N. Y., presents complete engineering and production data on the latest methods for speeding up grinding and finishing operations by conversion from abrasive set-up wheels to coated abrasive belts.

Thoroughly illustrated with typical production photographs, artists' drawings and phantom views, the folder demonstrates the sound engineering simplicity of the conversion principle, gives the technical explanation of belt superiority, and presents in readily understood form the specification range for the various types of backstands, contact wheels and coated abrasive belts.

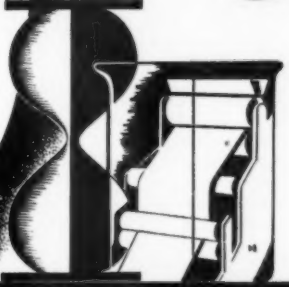
Ask for folder, "Grinding and Finishing with Idler Backstands".

Recommends New Products to Manufacture

The firm of Edward P. Bishop & Associates, 4031 Goodwin Ave., Los Angeles 26, Calif., offers a "new products service" to manufacturers throughout the U. S. Under the Bishop system, inventors throughout the country are culled for new products which will fit into the specific manufacturing facilities of Bishop clients. Both established products, which have been manufactured in the past but discontinued because of the war, and brand new products are available through this service.

FUZON-O

The New Waterproof Coating with "VINYLITE" Resin base



CUTS TIME, LABOR & MATERIALS IN HALF

Cut cost three ways with FUZON-O, the new "Vinylite" resin base formulation . . . for coating cotton, nylon, glass fabrics and other materials . . . which resists oil, grease, alkali and acid . . . withstands the oxidizing effects of air and the photochemical effects of sunlight . . . and is exceptionally immune to moisture, abrasion and temperature variation. Learn more about FUZON-O. Write for booklet to the Stanley Chemical Company . . . manufacturers of Stanley Lacquers, Enamels, Synthetics and Japans . East Berlin, Conn.

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Stanley Chemical

Industrial FINISHING

Distributed monthly to finishing room and paint shop foremen, production superintendents and company officials of metal-working, woodworking and miscellaneous industrial plants where production cleaning and finishing are major operations in parts and products manufacture.

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Editorial

Your Money's Value Now and in Future

★ Sure, we've got to win the Peace. Of course, we'll have to keep a close watch on Germany and Japan. Naturally, it's important to get along with Russia. Yes, we'll have to move along smoothly with Reconversion plans if jobs are to be found for all who want to work.

These, stated briefly, are the topics that are loudly discussed on the air lanes, featured in our daily newspapers, argued around every table and meeting place. But the subject which may have more direct meaning to most of our citizens is buried away in the back columns of the press, or debated learnedly on an occasional radio forum by profound authorities whose theories are generally cloaked in $7.00 words.

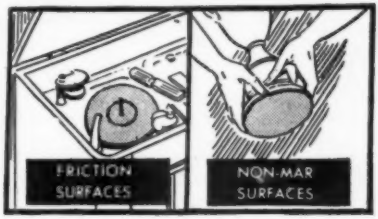
The most important consideration facing you, and you and you, is, *"What will be the future value of our money?"* Or, as those who read as they run would say, *"Will we have inflation?"* Brother, did you say will? If you want to step over to this corner and take a look at some of the figures, you will agree it's with us right now:

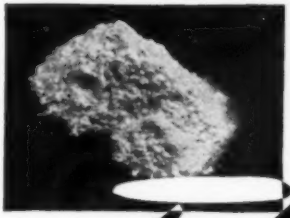
Many stocks listed on the big board are selling today at figures ranging anywhere from 100% to 500% above their 1942 lows. (I am quoting Charles J. Collins, Detroit investment counselor).

According to the Alexander Hamilton Institute, farm real estate values are now 50% above the 1939 level. *The New York Times* recently printed statistics showing that the overall value of such holdings has risen from *thirty billions* in 1933 to approximately *fifty billions* at this time.

No elaborate charts or tables are needed to show the average housewife that the cost of things in her everyday budget is soaring,

★ Guest Editorial . . . Many readers can write an excellent editorial — two or three paragraphs that present a timely suggestion or valuable idea which will stimulate real thought on a live subject. The Editor welcomes guest editorials and pays for those that are published.





All sorts of products are using RAYCO *flock*

From strict functional uses such as built-in gaskets and sound-deadening; through combination decorative and utility as in interior and upholstery fabrics; to purely decorative as on packages and displays — Rayco Flock offers the product engineer endless opportunities. This surface coating material is supplied in an endless variety of cuts, fibres and colors. Methods of adhesion are simple and thoroughly proven. Use is economical. We gladly furnish samples and counsel.

FUNCTIONAL USES

Used in airplane, auto, and numerous other industries for—

SOUND DEADENING—TEMPERATURE INSULATION—INTEGRAL GASKETS—SHOCK ABSORBING SURFACE—NON-MAR SURFACE PROTECTION

DECORATIVE USES

Applied in various lengths and colors to wood, paper, cloth, metal, etc., the following effects are produced—

SUEDE LEATHER — FURNITURE UPHOLSTERY FABRICS—AIRPLANE AND AUTO INTERIOR FABRICS — VELVET — VELOUR — MOHAIR

RAYON PROCESSING CO. of R.I. INC.

55 TREMONT ST., CENTRAL FALLS, RHODE ISLAND

Developers and Manufacturers of Printing and Coating Flock

with quality steadily hitting new lows.

But most observers agree that the serious test for us lies ahead. Despite the sharp increase in the cost of living since Pearl Harbor, we have actually done well in comparison with our experience in World War I. It is pertinent to point out, however, that the really steep boosts in the price index came after the end of hostilities.

If we give way to those interests clamoring for the end of all price controls as soon as the shooting is over this time, we may be in for serious trouble. One of the great dangers would be the sudden cashing of billions of dollars worth of our War Bonds, to bid up the limited supply of consumers' goods that will be coming along in the next year or two.

As Will Lissner wrote not long ago: "Backed by goods, this purchasing power will not be inflationary. But, if thirty to forty billions of wartime savings enter the market, the amount saved only because it could not be spent, the sum would be a powerful inflationary influence on prices."

The vast wartime savings of the American people are a veritable time bomb. If the bulk of this fund is left untouched in the next 20 or 30 months, it may pave the way to a long period of prosperity. But if everyone joins a mad scramble to cash in their bonds to snare those few precious autos, refrigerators, and homes that will be around, serious trouble may be brewing.

It will affect the value of all our life insurance, savings accounts and bonds. It will lead to a dizzy spiral of inflation that will end in fateful Depression, as it always must. So, if you value the future security and happiness of your loved ones, vow to hold on to those War Bonds, curtail your purchases, pay your taxes gladly and support your Government in the continued enforcement of price controls. The opposite course may lead to grim disaster.—L. H. SINGER.

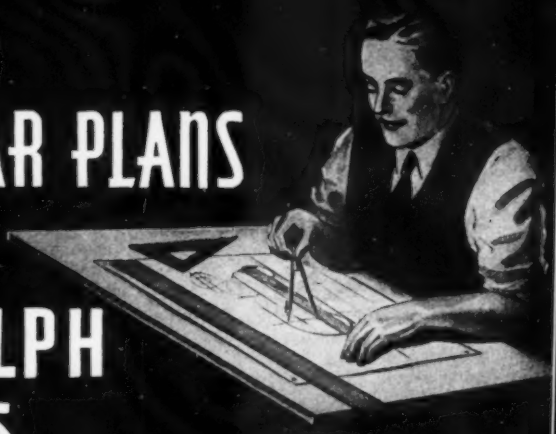
Technical Service For Users of Paint, Finishes

★ I often wonder about the number of finishing departments that fail to avail themselves of the experienced technical service personnel of the paint manufacturers. Such an oversight, besides being a pity, might well mean increased costs due to the continued use of materials or methods that are outmoded or otherwise unsuitable.

Technical service can render the user of finishing materials many benefits. Consultations with paint suppliers' technical men should precede any new installation in the finishing department. You may learn that new methods of applying paints are applicable to your product. Just because you have never been able to use dipping methods before does not necessarily mean that you cannot do so now. Automatic dipping and spraying, electrostatic dipping and spraying — these methods or others may make your finishing process simplier and your finishing costs smaller.

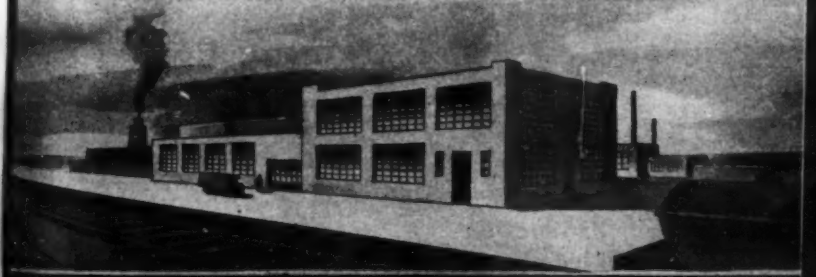
Your proposed oven installation may now require less floor space than you contemplate. Newer, faster baking coatings are available to you. Why install a 100-ft. oven first and then find out that a 40-ft. oven would have done the work? The Technical Service man is entrusted with the job of keeping up with the latest developments in methods of application, equip-

in YOUR POST-WAR PLANS include RANDOLPH FINISHES



to contribute to the beauty, wear, performance and value of your products

We invite you to consult with our staff of experts on technical matters regarding your finishing problems



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RANDOLPH

FINISHING PRODUCTS CO.

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ment and, most important, with the newest types of surface coatings.

The T.S. man is often a trouble-shooter. His wide experience is at your service when you run into difficulties. In cooperation with your finishing department staff, he will help you resume full production sooner.

Even when production finishing is running smoothly, periodic discussions between finishing department heads, plant laboratories and T.S. men are bound to prove beneficial.

Alert organizations will wish to keep posted not only on developments that have been newly announced, but on research that is still going on—the striving to make better finishes. Such organizations will have novel ideas of their own which, in order to translate them into efficient production, may require the formulation of entirely new products. There is nothing like a challenge of this kind to bring out startling results.

Think of a Technical Service man as an ambassador of helpfulness and as a diplomat. He can be trusted to respect your secrets and your ideas. He will be of help to you in initiating new painting operations; he will work with you when you are in trouble, keep you posted on new developments, make money-saving suggestions, and be a stimulant to those in your organization who "think paints."—M. A. GLASER.

Get Your Production Without Extra Exertion

★ Most employees can see the justice of wage setups that pay the biggest money to the men who have done the most work. A rate fairly arrived at and evenly applied to all workers, will be incentive enough for each one to do his best; and, over a long period of time, I wonder if it's safe to go much farther than that point, to increase output.

The finishing department executive or foreman who looks at the problem of production on a long-term basis, will not be tempted to force matters by artificial means. He recognizes two sound facts: First, except in emergencies, it is not the occasional "big day" but rather the consistently satisfactory months which count most. Second, the overall efficiency of the entire finishing department is far more important than to have one or two men setting new records while the remainder of the workers hit a slump because they can not hope to challenge the top producers.

Artificial forcing of production may seem a spectacular success, but only for a while. Some years ago, when "efficiency" was a magic word with which to end all industrial troubles, a group of workers set out to beat each other's accomplishments. The cards used in this particular position were stacked and measured, giving the employees what satisfaction they could find in bragging about "how many inches I did today."

I don't question the fact that they turned in a lot of work. But there were also reports of some workers who showed definite signs of breaking under the terrific strain of this daily "contest." I wonder if they did not eventually see the folly of such methods, and if their example didn't give some logic to others' reasoning that "I'm not going to suffer the effects of too much work, like Joe."

To bring out the best efforts in each employee is very fine. To

Silver Gold Copper

SUNBRITE METALLIC PASTE PIGMENTS.

PATENT NO. 2353058

Soon, we hope to introduce SUNBRITE METALLIC PASTE PIGMENTS. These new improved products will offer many more advantages to users of bronze powders. We are all waiting for the green light, and when Uncle Sam says GO, there will be no delay in supplying full information, samples and prices.

Samples Sent in Order Received.
Request Yours Today.

THE MITCHELL-MAYER CO.
ST. LOUIS 3, MO.

DUPOR

TWIN FILTER

RESPIRATOR No. 4

The favorite of users everywhere to guard against paint spray vapors and nuisance dusts! Made of soft, high grade rubber, foldable, reversible, fits any shaped face. Equipped with face cloth, it presents the utmost in comfort. Weighs only 4 ozs. Does not hinder conversation. Price $19.80 doz.

Sample $1.65 pp.

H. S. COVER, South Bend, Indiana

reward them according to their ability should help achieve permanent progress in the finishing department. But to introduce artificial means of matching each man against his fellow workers, while it may bring on a temporary flurry of production, must in the end lead to discouraged employees among those who can not reach or hold the fast pace. Beyond that will come lowered morale, dissatisfaction, and an inevitable slump in production.—G. M. D.

Finishing Foremen's Postwar Problems

★ Foremen finishers are going to be called upon to teach new finishing crews. In some cases it will mean training an entirely new organization. A number of plants were obliged to discontinue their finishing or product painting operations when they changed over from the manufacture of civilian goods to the production of war materials. As a result, part or all of their former paint room workers are now in the armed forces or have taken jobs elsewhere. Where this condition prevails, when these companies return to making civilian products that require painting or finishing, it will be necessary for them to train an entirely new crew of finishers in each and every phase of practical finishing. This will mean a big task for their finishing foremen.

It is comparatively easy to teach and work beginners alongside a few experienced workers, but to take all new men for the finishing room and teach them all at the same time is really something. A few individuals will learn quickly and can soon be trusted with some responsibility, but others will not be able to do certain work to which they are assigned. This will necessitate more or less changing of help from one operation to another until each man has the job for which he is suited.

To handle a situation like this, the finishing foreman must have patience, tactfulness and the ability to explain things clearly and simply. He must have a thorough knowledge of the workings of all finishing materials, equipment and supplies; he must understand the technique of rubbing and polishing by hand and with machines, and he must be able to teach what he knows to others.

After all, it is the finish or paint job on the finished product that attracts or repels prospective buyers. A fine finish will elicit admiration and hold interest. It is a source of real satisfaction to both the seller and the buyer—and remember, this fine finish is the responsibility of the finishing foreman.—FLOYD COHOGAN.

Surface Preparation Before Painting

★ Are you preparing your metal properly before you paint? At first thought this may sound like a silly question. It is anything but silly. The finest finishes will afford inadequate protection to your products if your metal surfaces have not been suitably prepared for painting.

Why do manufacturers of such important items as motor vehicles and refrigerators concern themselves with metal surface treatment prior to finishing? They know it is the finish that first meets the eye—and continues to strike the eye every day that the product is in use. They know that

Look at That!

That is a slab of overspray deposit—over ¼ inch thick—peeled off the wall of a spray booth after a month's use. Note how smooth the back—that's because the walls were protected with

DOSTER BOOTH-KOTE

Booth-Kote—a pigmented paste of brushing consistency—enables you to clean and recoat a booth in less than 2 hours. It is so easy that a boy will enjoy the job.

JUST DAUB IT ON
and when loaded with paint and lacquer overspray—

JUST SCRAPE IT OFF
with a putty knife or scraper — as easy as peeling an orange.

One gallon is enough for an average booth, tunnel and fan blades — and should last a month.

Packed in 5 gallon pails at $1.25 per gal. F.O.B. Chicago. Mail your order today.

DOSTER AND CO., 4840 W. Superior St., Chicago 44, Ill.

Just for the Record

REMEMBER THESE NAMES

After V-day they will mean something to you!

CEL-U-LAK

A complete line of cellulose derivative lacquers and enamels.

FORM-A-ROC

A unique line of quick-baking, tough adhesive synthetic enamels.

THE VARNISH PRODUCTS CO.

5208 Harvard Avenue Cleveland, Ohio

an unsightly finish, which discolors or peels or is washed off by normal conditions of use, will nullify much of the high grade engineering they have invested in their business.

Too many times we have seen high grade paint materials applied over dirty, oily, carelessly-washed metal. We cannot help wondering whether management is ignorant of the fact that metal preparation is an integral part of the painting operation, or whether some executives simply have no concern with the product they manufacture after it leaves their plant.

The war years have taught us emphatically that proper metal preparation is *absolutely necessary* where the finished item will be subjected to moisture, humidity, salt air, etc. The finest finish in the world will not give good service over an improperly prepared metal surface. Give your paint the consideration it deserves; give your product the quality and dignity it merits; check over your prefinishing procedures now.—M. A. GLASER.

Stands High Heat

THE coating for clutch shoes of Sikorsky Helicopters requires a finish that will withstand relatively high temperatures, and at the same time protect the surfaces from corrosion. According to a note supplied by a correspondent, the finish finally adopted is "Silco," an inorganic-base material which, after application, must be oven dried for 5 minutes at 200°F. and then baked at 350°F. This finish can be sprayed. It is not a flexible coating but it is remarkably resistant to abrasion, heat, corrosion, salt spray, mild acids and alkalies; and is unaffected by a wide range of solvents.

Random Comment on the Industrial Scene

(Continued from page 8)

Plastics' Limitations — In the opinion of Louis Francisco, of the Formica Insulation Co., there will be no cheap all-plastic furniture, automobiles, bathrooms or other revolutionary items for a long time to come. Until production is many times greater than today, he declares, the plastics industry will never approach the low cost of items made of other materials — such as steel, wood or glass.

Francisco believes that laminated plastic material will be widely adopted in the years ahead for surfaces that must stand abrasion, as well as for furniture veneers. "But the use of plastics can be justified," he insists, "only when they do the job better, look better, or last longer."

* * *

Industry Plans Expansion — After surveying 7000 representative companies, the Department of Commerce estimates that American business is ready to spend well over four billion dollars for alterations, plants and equipment during the current fiscal year. Of course, it must be emphasized that these impressive figures cover plans, not commitments.

Almost a third of the contemplated improvements, surprisingly enough, will be in new plants. Among the industries scheduling heavy expenditures are the paper and printing group, textiles, leather goods, and the apparel trades.

* * *

New Metal Primer — A superb and economical substitute for zinc chromate has been developed by a manufacturer of finishes in Cleveland, Ohio. It is Micalith-G, slate

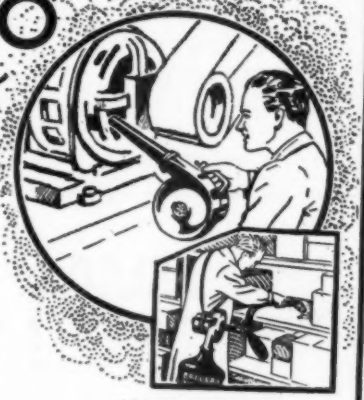
A Beautiful Imitation
OF A REAL PLATED FINISH
Chrome Aluminum

Manufactured by us in a READY-MIXED Chrome Aluminum PAINT for dipping and spraying purposes; both airdry and bake.

We also can serve you with a Chrome Aluminum PASTE to be used in connection with quick bake synthetics or varnish vehicles, for the above purposes.

EDWARD C. BALLOU CO.
Bronze Powders—Aluminum Powders and Pastes
6 VARICK STREET NEW YORK 13, N. Y.

TORNADO *settles your* DUST *problem*



DUST will be LESS of a problem with the TORNADO Portable Electric Blower to blow it out of motors, generators, shafting, bearings, etc. TORNADO blows out dust, dirt, lint—with its swoosh of clean, dry air.

Powerful ½ h.p. universal motor makes it easy to clean largest motors or generators without dismantling them. Plugs in at any electric outlet.

Costs less than 3c an hour to operate. Weighs only 14 lbs. Investigate!

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Consultant Engineers
Conveyor Systems Labor Saving Devices
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Winston-Salem, N. C.

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WOOD BLEACH
Accepted Standard
For Furniture and Cabinet Makers
Also Interior Woodwork Recoloring
L. R. van Allen Co.
Patent Licensee
CHICAGO 54

Remove Production Line DUST, LINT, and SAND PARTICLES with this SOFT TACKY CLOTH before applying finish.
CRYSTAL TACK-RAGS
Gross Lots Available Thru Paint Dealers or from the Processor.
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NALCO
Infra-Red Ray Lamps
Best for Infra-Red Ray Baking and Drying
Carbon Filament Lamps, service proven, available in Inside-Silvered (self-reflecting) or in Clear Glass types. Write for details
North American Elec. Lamp Co.
1030 Tyler St. St. Louis 6, Missouri

gray in color, and is extremely fine in texture. The Navy has already given its full approval to this new pigment, and several railroads have adopted it for metal priming.

There is an interesting story behind the introduction of Micalith-G. Some time ago the paint company's engineers learned that a number of bridges in the neighborhood of York, Penna., had not been repainted for five to ten years, and yet appeared to be in excellent condition. Further investigation showed that they had been protected with a coating containing this strange mineral. Thereupon the only known deposit, which was found to be located in that area, was purchased and put into speedy production.

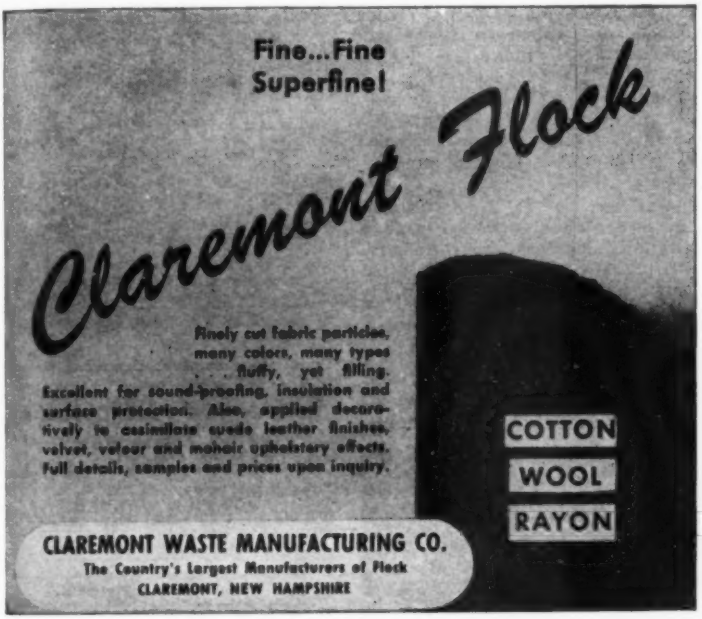
* * *

For Visitors—Readers of INDUSTRIAL FINISHING may obtain free tickets to leading radio broadcasts, on request. When planning a trip to Manhattan, drop a line to: *Lawrence H. Singer, 130 West 86th Street, New York 24, N. Y.*

Among the cooperating sponsors are: Reader's Digest ("America's Town Meeting of the Air"); Philip Morris Cigarettes ("It Pays to be Ignorant"); and Eversharp Pencil Co. ("Take It or Leave It").

Have Fire Extinguishers Always Ready

MOST extinguishers should be placed so that their tops are not more than 5-ft. above the floor. These include carbon dioxide units with capacities of 10-lb. or less; water under 5-gal.; foam vaporizing liquid under 2-gal.; loaded steam, soda acid, dry compound and water and sand pails. Pails, however, should not have their rims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Finely cut fabric particles, many colors, many types . . . fluffy, yet filling. Excellent for sound-proofing, insulation and surface protection. Also, applied decoratively to assimilate suede leather finishes, velvet, velour and mohair upholstery effects. Full details, samples and prices upon inquiry.
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RAYON
CLAREMONT WASTE MANUFACTURING CO.
The Country's Largest Manufacturers of Flock
CLAREMONT, NEW HAMPSHIRE

less than 2-ft. above the floor. The 15 and 20-lb. carbon dioxide, 5-gal. water, 5-gal. foam and 2 and 3-gal. vaporizing liquid types should have their tops not more than 3½-ft. above the floor.

Carbon dioxide and vaporizing liquid types should be hung on hangers supplied by the manufacturer, while the others may be hung on hangers or set on brackets or shelves. Wheeled extinguishers, added where extra hazards require, should be accessible, and adjacent doorways and alleys must be kept clear to afford ready passage.

There are several ways to make the locations of extinguishers conspicuous, well-known and readily seen despite excitement which normally attends the outbreak of fire. A large red spot painted on the floor or aisles under the location of an extinguisher, or a vertical red band with yellow borders down a side wall or column where equipment is located, act as constant reminders. Lights of distinctive color, or signs "For Fire" with arrows pointing to extinguishers, are other useful devices.

To identify equipment as to the type of fire it will combat, a decalcomania may be attached to the equipment or a stencil applied to the wall. When two or more extinguishers of different suitability are put in the same location, don't leave room for guesswork; mark plainly. *(Continued next page.)*

Good housekeeping is important; in addition to protecting extinguishers from traffic, keep boxes, cartons or other material far enough away to allow ready access to all units. Also, see that extinguishers are not used for hat and coat racks and similar purposes.

And last but not least, instruct the fire brigade on the location of all units and acquaint them with the operation of each type of extinguisher. But don't rely wholly on first aid equipment. Have direct fire station pull boxes in the plant. Attack the fire as quickly as possible and always summon the fire department.—N. E. Co.

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INFRA-RED OVENS & APPLIANCES
INSULATED · REFLECTIVE · SECTIONAL
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INFRA-RED ENGINEERS & DESIGNERS
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LACKEROFF SOAP
A remarkable new liquid hand soap that actually removes LACQUER, SYNTHETICS, STAINS, ETC., yet leaves hands soft. Saves thinner.
POTTER PAINT CO., Cortland, N. Y.

OVENS
OVEN-MATERIALS-HANDLING SYSTEMS
OVEN PROCESSING SYSTEMS
FOR ALL MATERIALS
ENGINEERING VERSATILITY
IOE
THE INDUSTRIAL Oven Engineering CO.
11421 Detroit Avenue Cleveland 2, Ohio

Dr. Lanson Joins Grand Rapids Varnish Corp.

The Grand Rapids Varnish Corp. announces the addition to its research staff of Dr. Herman Lanson, who will have charge of research on synthetic resins and general supervision of the company's modern plant for the manufacture of synthetic coatings. Dr. Lanson has had a varied research experience in the fields of resins, oils and driers and for the past few years has been chief chemist for an eastern manufacturer of oils and resins. Dr. Lanson has several patents and patent applications on oils and resins. Among his contributions to the technical literature is an article "Milkweed Seed Oil: Potential Value in Protective Coatings", which appeared in the Feb. 1945 issue of Industrial & Engineering Chemistry.

Classified Advertising

Rate: 50 cents per line per insertion—minimum $1.50

POSITION WANTED

As Foreman Finisher. Experienced on all lines. Available at once. Age 40. Address IF-217, care Industrial Finishing.

FINISHING ENGINEER.

A graduate engineer with ten years' practical experience in the finishing industry is looking for a large user of finishing materials who wishes to reduce costs, improve quality and speed production in his finishing department during the critical conversion and manufacturing period ahead. Inquiries invited. Address IF-218, care Industrial Finishing.

CHICAGO AREA REPRESENTATION

Group of salesmen with extensive following in greater Chicago area are looking for industrial finishes and allied lines to job and warehouse. Financially able to handle and can guarantee large volume of business. Address following to arrange meeting —IF-219, care Industrial Finishing.

POSITION WANTED

By Industrial Finishes sales manager. 20 years' experience with three progressive concerns. Thoroughly familiar with all phases of industrial finishing. Address IF-231, care Industrial Finishing.

COLOR MATCHER WANTED.

Man with good experience in color matching wanted by progressive New Jersey manufacturing concern. State experience, age and qualifications. Address IF-220, care Industrial Finishing.

GENERAL MANAGER'S POSITION
Wanted. Have over 20 years' experience in the paint industry, covering both Industrial and Dealers' Paints. Can furnish good references covering sales, laboratory and production work. Am energetic and can keep your company in the lead. Address IF-232, care Industrial Finishing.

POSITION DESIRED
By protective coating technician and chemist — 36 — married. Specialist in technique of applying roller coating finishes. Ten years' experience in development and control of metal container and closure protective and decorative finishes. Permanent position desired in development work and technical service and sales with middle size progressive industrial organic protective coating manufacturer. Chicago area or California. Address IF-233, care Industrial Finishing.

INDUSTRIAL SALESMAN
Desires position for Chicago and vicinity. Have good record in sales work and technical knowledge. Have sold this territory with commission running $10,000. Will only consider a reliable company with proven Industrial Finishes. Address IF-235, care Industrial Finishing Magazine.

FINISHING FOREMAN WANTED.
Experienced in conveyorized finishing and force drying. Excellent opportunity for right man under 45 years of age. All replies confidential. Address IF-234, care Industrial Finishing.

EXPERT WOOD FINISHER.
Experienced in staining and finishing fine furniture. Permanent or seasonal work. Must be fully qualified. JESSUP, INC., Box 6272, West Palm Beach, Fla.

SHADER WANTED.
A rapidly growing company manufacturing quality Industrial Enamals, Synthetics, Lacquers, is looking for the country's finest shader. Salary a secondary consideration. State full details. All communications confidential. Address IF-230, care Industrial Finishing.

COLOR MATCHER WANTED
For factory production, with promotion to foreman if qualified. Plant in Ohio. Permanent job. Give age and salary expected. Address IF-223, care Industrial Finishing.

INDUSTRIAL SALESMAN WANTED
To call on established trade and develop new business for well-known aggressive eastern paint manufacturer. Prefer man familiar with eastern Penna., who has called on woodworking and metal industries. Address IF-226, care Industrial Finishing.

CHEMIST WANTED.
One with knowledge of wood finishing business preferred, but not essential. Address IF-225, care Industrial Finishing.

TWO SALESMEN WANTED.
Eastern manufacturer of complete line of Industrial Finishes has territory open in New Jersey and eastern Pennsylvania, also territory in New England. Prefer men who have practical experience in both metal and furniture finishing. Technical experience an asset, but not an essential. The man who applies must have good references and a successful record. Established business in both territories. Our own men know of this advertisement. Direct your reply with full details, to IF-227, care Industrial Finishing.

EXPERIENCED PAINT CHEMIST
Wanted, by well-known Detroit manufacturer of quality paints, varnishes, synthetic enamels and lacquers. Particularly interested in lacquer formulator, however, can use man with experience in other type finishes. Excellent opportunity. Replies held confidential. Our employees know of this ad. Address IF-211, care Industrial Finishing.

FOREMAN FINISHER WOOD FINISHING DEPARTMENT WANTED
Suburban New York firm with modern factory, now converting plant to production manufacture high grade radio cabinets, wants Foreman for Finishing Department. Applicant must have broad background and experience in production finishing radio cabinet or furniture business.

Company is fast growing young organization interested in setting up conveyorized finishing of 500, 1000 cabinets per day. Position offers exceptional opportunities to man with right qualifications and salary commensurate with his ability. Application by letter with details of age, experience, nationality and past salary. Address IF-222, care Industrial Finishing.

WANTED—MAN WHO KNOWS SOUTHERN FURNITURE TRADE
Lacquer manufacturing Chemist with wide experience in wood finishing industry desires to locate capable salesman who has covered Southern territory with object of forming partnership for the manufacture of lacquers in that territory. He must have volume outlets and be capable of investing a small amount of capital which this advertiser will match for purpose of setting up lacquer production operation in the South. Advertiser is able to obtain ample credit from raw material manufacturers. He is familiar with Southern trade having supplied same for years. In reply state your present connection, territory covered and average annual sales. Replies will be held in strict confidence. Address IF-221, care Industrial Finishing.

SAN-ITAI-RIE
CRACK AND CREVICE FILLER
OLD FRIENDS ARE BEST!
Three generations of wood finishers have used SAN-ITAI-RIE FILLER. It still is best for all defects in wood.
SAN-ITAI-RIE FILLER CO.
DIVISION OF G. J. Liebich Co. CHICAGO 22, ILLINOIS

"COME TO TEXAS"
Finishing Foreman Wanted.

Small established Store Fixture manufacturer wants sober, reliable, working foreman finisher experienced in formulating and applying modern lacquer finishes on casework and furniture. Good working conditions. Give all information first letter. Address IF-224, care Industrial Finishing.

INDUSTRIAL SALESMAN

Wanted, to call on established trade and develop new business for well-known aggressive eastern paint manufacturer. Prefer man familiar with New England territory who has called on woodworking and metal industries. Address IF-228, care Industrial Finishing.

WANTED.

Industrial Finishing Salesman, familiar with Central and Northern Illinois territory. Salary and Bonus. Have established trade of approximately $50,000.00 annual sales, all civilian use. All replies held confidential. WABASH PRODUCTS COMPANY, Terre Haute, Ind.

SALESMAN WANTED

Nationally-known concern manufacturing a full and complete line of finishes for metal and wood, exclusively for the industrial trade.

An outstanding opportunity for a high-class salesman of proven record in industrial finishing sales.

We have one territory open in Chicago, and one in Illinois.

All replies held strictly confidential. LILLY VARNISH COMPANY, 273 North California Ave., Chicago, Illinois.

NEW LINES WANTED.

Modern Sales and Service organization in Philadelphia, having unusual Industrial clientele now specializing in Paint Spray Equipment, Air Compressors, and kindred items desires to increase their lines of merchandise. HOVEY SPRAY EQUIPMENT CO.

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In Chicago area for household kitchen article. Manufacturer must be equipped to form twenty gauge metal from one to five square feet, and bake enamel finishing. Article to be made has been seen and approved by large mail order house. Address IF-229, care Industrial Finishing.

FOR SALE.

Four 14' WATER WASH BINKS SPRAY BOOTHS — in excellent condition — New Hoods — less filters — Booths originally installed late 1939—are complete with main tanks, baffle housings, overhead exhaust, pumps, motors, starters, etc. Offered subject to prior sales—F. O. B. our plant — ship uncrated either truck or rail. Available for immediate shipment. contact FRANK MAY, Hussmann-Ligonier Co., 4201 N. Leffingwell Ave., St. Louis, Missouri.

FOR SALE

Jute Rubbing Tow. Write SECURITY BAGGING COMPANY, Armistead Bridge Road & West 23rd St., Norfolk, Va.

FORBES BAKING PRIMER

76—55-gal. drums Forbes Dark Grey Baking Primer @ 40c
In excellent condition. All or part. RAND CHEMICAL PRODUCTS CO., 2335 So. Mich. Ave., Chicago 16, Phone CALumet 2866-67.

SOLVENTS RECLAIMED

Dirty thinners-solvents - degreasing residues reclaimed by the drum or carload.

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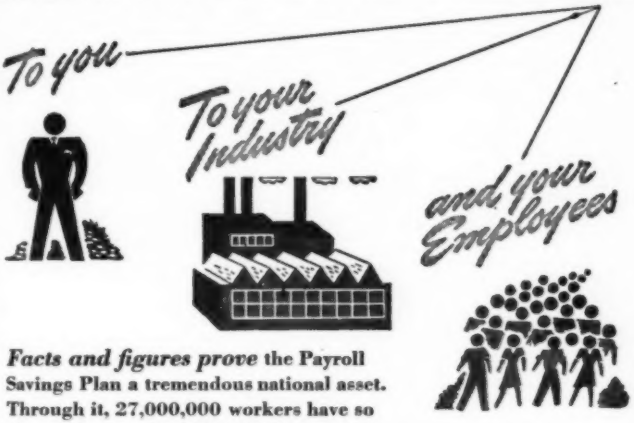
what the PAYROLL SAVINGS PLAN means



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Yours is one of 240,000 companies maintaining a Payroll Savings Plan. While fostering national security, this combined effort is creating a lucrative postwar market for you . . . and all industry!

Enrollees in this plan total 76% of all industrial employees . . . averaging a $25 bond each month per individual. Through this, millions now look forward to homes, educational opportunities and old age independence.

Surely, so great an asset is worthy of your continued . . . and increased . . . support! Now is the time to take stock of your Payroll Savings Plan. Use selective resolicitation to keep it at its 7th War Loan high . . . and build it even higher!

The Treasury Department acknowledges with appreciation the publication of this message by

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Back to Overalls Again

Yes, and for you Mr. Manufacturer, it's back to civilian goods again. You'll need different finishes—better finishes—and we here at Advance are prepared to provide them for you just as soon as raw materials are released.

ADVANCE PAINT COMPANY

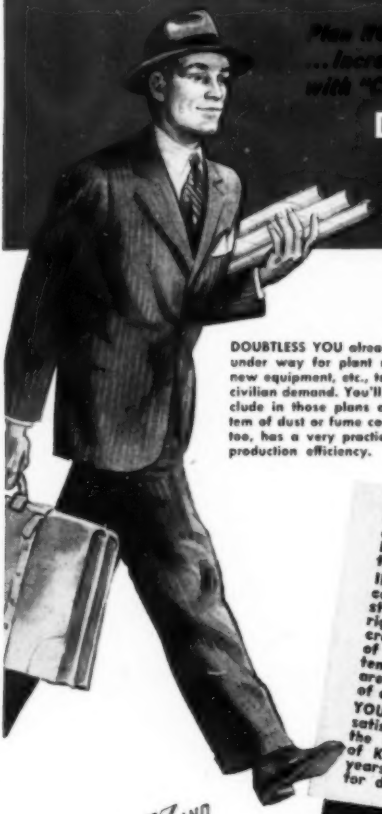
Manufacturers of Wood & Metal Finishing Materials

INDIANAPOLIS, INDIANA

MEET KEENER COMPETITION

Plan NOW to Safeguard Workers' Health ... Increase Production ... Lower Costs ... with "Custom-Built"

DUST and FUME Control



DOUBTLESS YOU already have plans under way for plant modernization, new equipment, etc., to meet coming civilian demand. You'll be wise to include in those plans a modern system of dust or fume control—for this, too, has a very practical bearing on production efficiency.

DUST AND FUMES not adequately controlled lower the output of workers, increase costs, add to health and accident hazards, and induce overly rapid deterioration of machinery and equipment.

IN INDUSTRIES everywhere, dust and fume control systems planned, designed, and installed by Kirk & Blum Air Engineers are right now paying for themselves in increased worker efficiency and maintenance of stiff production schedules. K & B systems give superior service because they are custom-built to fit the particular needs of each individual plant.

YOUR ONE BEST assurance of complete satisfaction in dust or fume control lies in the unbiased counsel and expert planning of Kirk & Blum Engineers—backed by 38 years of professional "know how." Write for details.

KIRK AND BLUM

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